

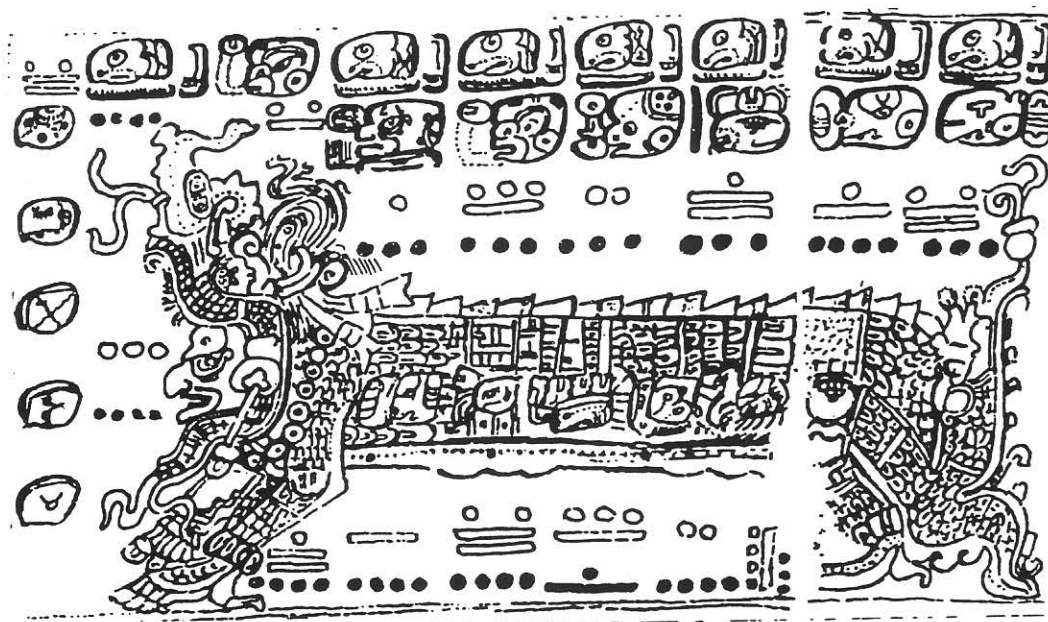
Part 2

The Dresden Codex



by Linda Schele and Nikolai Grube

The Auguries



by Nikolai Grube

Attributive Hieroglyphs (Augural Glyphs)

In his study of the hieroglyphic texts of the Maya Codices, Günter Zimmermann identified a class of hieroglyphs, which, according to him is neither verbal, nor nominal, and almost regularly occupies the last position in a hieroglyphic caption to a painted scene (Zimmermann 1955). Zimmermann noticed that these hieroglyphs are closely linked to the nominal glyphs of the gods but never substitute for them. He called these glyphs "attributive glyphs" because he believed them to represent specific attributes of the gods with whom they are connected. He was able to identify 24 different attributive glyphs. These clearly fall into two groups: those which have a negative aspect and which are only connected to negative Gods, and those which have a positive aspect and are connected with the good Gods. Zimmermann did not realize that many of his attributive glyphs were merely variants of each other; when he wrote his book, the study of substitution patterns has not even begun. Therefore, the actual number of attributive hieroglyphs is much smaller.

Since then, attributive glyphs have received very little attention by students of the Codices, except for occasional discussions of single glyphs. As a whole, they have been ignored. However, the study of the attributive glyphs is a key issue for the understanding of the "destiny", the "fate" which is brought by and connected with a specific God. They help to identify the role of the Gods and their character. In addition, they provide the actual "augural" information about the fate of a day. As such, they function quite similar to the auguries in the books of Chilam Balam:

<i>Bolon Kan</i>	9 K'an
<i>utz, malob, ma kazi u chalbil,</i>	good, not bad, it is not ugly his content.
<i>lahun chichan</i>	10 Chikchan
<i>lob, kaz, maix hach kaz xani,</i>	bad, ugly, and it is not too bad, also.
<i>buluc cimi</i>	11 Kimi
<i>lob u ziyen chac hahal utz</i>	bad, the beginning of the rain is truly good.
<i>lahca man yk</i>	12 Manik
<i>utz, ma kazi, utzul hab ise</i>	good, not ugly, a good year.
<i>oxlahun lamat</i>	13 Lamat
<i>ma kazi u kin chicam, yb buul,</i>	not ugly, it is the day for jicamas, ib-beans,
<i>taman, yc, ziciil, macal, yz</i>	cotton, chili, pepita, macal and sweet potato.
	(Chilam Balam of Chan Cah folio 112)

In contrast to the books of Chilam Balam, these augural statements are not determined by the character of the day, but by the God who presides over a *t'ol*. The association between a God and an attributive glyph is not fixed or static, but Gods who carry negative attributes can never be associated with positive attributive glyphs. Within these categories, however, there is some variation. God A, the Death God does occur with three different attributive glyphs, even though there is one attributive glyph which is clearly preferred.

Syntactically the attributive glyphs seem to represent short stative constructions. They carry no signs of verbal inflection for tense or aspect. They can be noun phrases or adjectives which by the addition of an absolute pronoun at the end become stative constructions. Since the third person of the absolute pronouns are not marked in Yukatek, no pronoun suffix is found. In Modern Yukatek, *ayik'al-en* means "I am rich", *ayik'al-ech* "you are rich", and *ayik'al* "he is rich". Thus, the attributive glyphs most likely represent epithets and attributes such as "Ahaw K'in, he is bad".

In the following section we will discuss all attributive glyphs which show up in the Codices.



is a death head, but never the same as the death head of the Death God itself. The principal difference is the very large mouth line which curves up and divides the entire sign. Often, there is a black area attached to the right side of the large mouth line. The attributive glyph almost always carries a *la* suffix. The standard prefix is a small affix which has not yet been deciphered. It consists of an oval element and a waved element under it. This prefix can be replaced by signs for the syllable *u*, and sometimes both this prefix and a *u* syllable are present. This suggests that the reading of the attributive glyph begins with *u* or *hu*.

root; 2) that the attributive glyph reads *hu-CV-l* and the standard form of the God N verb *hu-CV-yi* or *hu-yi* (a suggestion made long ago by Barbara MacLeod and confirmed by Linda), and 3) that this root must refer to "dedication" in the context of the PSS and to a negative epithet in the case of the attributive glyph.

She argues that they are analogous to the speech scrolls that appear in the Central Mexican codices, but that in the specific case of the dogs, the *u* sign was intended as a phonetic rendering of *huuuu*, the

Landa's second *u*. Bricker takes this as evidence that Landa's second *u* represented the syllable *hu*. In Colonial Yukatek, the Maya distinguished between two different *h* phonemes, a "strong" *h* and a weak *h*. Therefore, Spanish priests often recorded words like *ha* "water" as *a* and *hul* "arrive" as *ul*. Only the Motul dictionary carefully distinguishes between "*h* simple" and "*h* rezia". We think that Landa's second *u* also represented the syllable *hu* with weak *h*, and that the prefix to the attributive glyph shows a breath or sound line to indicate howling. Words for "sound of air" and "sigh" in Mayan languages include Yukatek *jùuyub* "yawn, inhale breath after eating something hot"; *jùum* "noise"; Chorti *uhui* "sigh, snout", *uhuiyar* "sigh, heavy breath", Tzeltal *hu'xiyel* "blow; also a curing ceremony"; Tzotzil *hub* "blow (on fire)", *hupan* "blow through, inflate, play".

The Chorti word *uhui* "sigh, snout" would support Barbara MacLeod's "sacralize" decipherment for the God N verb, which is also on the Chorti verb *uhres* "sacralize". Our attributive glyph should have the same reading, as suggested by the substitution patterns described, but no good translation could be found which would fit as an epithet for the Death God. As a weak possibility we suggest that the attributive glyph may be related to the Tzotzil word *jHu'el* "powerful person", which is derived from the root *Hu'* "be able, can, take place".

Another possibility is that the attributive glyph is directly related to the idea of blowing and that the Death God blows bad, death bringing winds. In Chol, *wujt* means both "blow" and "sorcery".




Associated with: God Q, Hun Ahaw; Kimil; God A'; Tzul; Kuy; K'uch
This negative hieroglyph is the principal augury of God Q but also

occurs with other Gods of death and malevolence. It consists of three syllabic signs, *u mu-ka*, or *u muk*. Even though the reading presents no problem, the interpretation is ambiguous. In the Motul dictionary, *muuk* is given as "nuevas o fama en buena y en mala parte" (bad and good news). Here, clearly in a negative context and closely associated with negative and Death Gods, we think it is related, or derived from *mukul* "cosa secreta y encubierta" (a secret or covered thing) and *muk* "burial".



Associated with: Ahaw K'in, Tzul, God Q, God H, God A'

The main sign is the same as the day sign *men* . In a few cases, the main sign looks more like the codical

version of the syllable *le*, but this may simply be due to confusion of graphically similar signs. If the main sign really reads *men*, it could refer to Yukatek *men* "work, obligation". In the Motul dictionary, *ah lob men* is "malefico" (somebody who brings bad luck). Werner Nahm has first shown that the superfix is composed of a small bat head (which otherwise is the syllable *xu*) and the two infixes of the syllable *lu*. He suggests to read the superfix *xu-lu* *xul* "end (of)" (Motul: *xul* "fin, o cabo, paradero, término") and to translate the entire compound as *xul men*, "the end of work", or "the end of creation". The reading of the superfix is still tentative. Outside of the Codices the superfix only occurs in the name of Piedras Negras Ruler 4.





Associated with: Kimil, God A', God Q, Ahaw K'in, K'ak' Tzul

This negative epithet is associated with Gods of death, sacrifice and drought. It is clearly negative. The main sign can either be the gopher head variant or the Imix variant of the *ba* syllable. The suffix is either the codical allograph for the *hi* knot or *la*. The key to the understanding of the glyph is the small arm in front which makes the well-known "woe-to-me"-gesture. This gesture is known from many other examples as a sign of mourning and grief. With the *-bah* or *-bal* suffix clear, we have to look for a CV*b*-stem for the hieroglyph. The very obvious negative connotation of the glyph suggests that a reading of *lob* or *lobal* "bad, badness" is very likely.



Associated with Kuy

This is a very rare attributive glyph. Thomas Barthel (1955) has shown that the affixes *tok'* "obsidian knife" and *che'* "wood" correspond to the stock phrase *che yetel tunich* used for strife. Such a phrase occurs in the Chilam Balam of Chumayel: "Then it was that fire descended, then the rope descended, then rocks and trees descended" (Roys 1933:99). It seems that "stone" and "wood" were used as a metaphor for punishment like in the phrase *Eman u che u tunich coklal* "The punishment of God has come upon us with deaths or pestilence" in the Motul dictionary (1929:346). Here, the *tunich* part of the metaphor is replaced by *tok'*, and the main sign reads *bah*, which is a word for "beat" in Yukatek.



Associated only with Ahaw K'in and a dog who brings fire.

This is the principal attributive glyph of the Sun God, Ahaw K'in. It is also used by the *tzul* dog who descends from heaven with torches in the hand.

This suggests that the dog overlaps somehow with the Sun God as the bringer of fire, heat and drought. This association is supported by the following passage from the Chilam Balam of Chumayel which talks about fire as the fate of K'atun Three Ahaw (folio 92):

Haulahom u keulel chacbolay
tan kiwic.
Pek u mut.
Zac-patay chacil,
Thul caan chacil ...

The skin of the jaguar will be spread out
over the marketplace.
The *dog* is its tidings.
There are rains of little profit,
rains from a rabbit sky ...

Ralph Roys (1933:154) states that "It is also quite possible that *pek*, the dog, had a symbolic meaning unknown to us ...". If he had taken into account the images of dogs associated with fire and the attributive glyph of the Sun God, he would probably have realized that the dog must have been a symbol for drought or some effect caused by too much sun.

The meaning of the attributive glyph remains less than clear. Even though its three constituent elements can be read (*k'ak'-te-ku*), no convincing translation for the entire compound has yet been suggested. The presence of the *k'ak'* fire sign suggests that the hieroglyph has a direct connection to the fire bringing aspect of the Sun God. The final two

signs which can reverse their reading order could represent a phonetic spelling or the combination of two logographs ("stone" and "wood").



Associated with God H and Tzul

The three signs of this hieroglyph are *ma-tzi-li*. David Stuart (1987) has suggested that this glyph is the negative of the positive augury *y-utzil*, "the goodness of". The constant lack of the u vowel for the *utzil* spelling may indicate, however, that this negative attributive glyph reads *matzil* and has no connection to *utz* "good". We have not yet found a good translation for the word *matzil*. It may be that *matzil* consists of the negation *ma'* and a suffix *-tzil*. There is a suffix *-tzil* in Yukatek, but it is used in a different context (to suppress possession of suffixes which are inherently possessed, such as *na* "mother of" > *natzil* "mother"). Linda and Nikolai had used "nothingness" or "no-ness" as tentative translations, but there is no linguistic evidence that the suffix *-tzil* can create this derivation from the negative particle.



Associated with Itzamna (almost always), God L, K'awil, God H, the Waterlily Monster

This is the principal attributive glyph of Itzamnah, even though it occasionally occurs in association with other Gods. Itzamnah, the first priest and sage always carries a flower in his headdress. The main sign of this attributive glyph is the Ahaw-face (𐛀), which outside of the day sign context reads *nik*, "flower". The two "mirror" signs before and after look identical but may have different functions. The mirror sign as a suffix may provide *-il* for *nik-il* "flowery?". The prefix here certainly fulfills the same function as before some of the nominal glyphs of Gods, such as before the glyph of the Maize God and before God A. The flower is the main attribute of Itzamnah, and his attribute may have been "flowers".



Associated with God E (almost always, and it is the only attribute of God E), God H, Itzamna

The main signs of this positive augural glyph are *ha* "water" and *wah* "food". The superfix is the codical variant for the sign T128. Even though there is an ongoing debate over the reading of this sign, everybody agrees that in many contexts it has to read *ch'V* or *k'V*, and that the vowel is either *i* or *a*. Of these options, *k'a* is the only one which makes sense in the context of this attributive glyph, because *k'aa* is given as "lo que sobra" (what remains), and "abundancia y sobra tener de alguna cosa" (to have abundance and too much of one thing), such as in the phrase *kaa u cah uoch ixim, u och buul* (I have a lot of maize and beans in abundance). Here it is the Maize God who brings an abundance of *wah* and *ha*, of food and water. Thompson (1950:269) had already suggested this translation, based on the combination of *wah* - *haa* in the books of Chilam Balam. The combination of "food and drink" is also documented in other Maya languages such as K'iche' (*wa ja'* "food"). In the Motul dictionary, *uah yaal* (possessed form of *ha*) is translated as "bread" in the phrase *uah yaal Dios* "el pan que Dios nos da por su misericordia y los temporales que da el mundo, de pan, frutas, etc." (Motul 887).



Associated closely with Chak, less often with K'u, Itzamna, God H, and K'awil

The principal attribute of Chak contains the numeral three, *ox*, and a compound sign which most people have taken to be two different signs.

Alfonso Lacadena and Nikolai both independently found this sign to be the codical version of



the "five tun lacking" sign (T158). The "five tun lacking" sign very often is replaced by the sign for the syllable *wi*. In one case, the "five tun lacking" sign even carries a prefixed *wi* complement, suggesting a reading *wi* or *wi-C* for both the "five tun lacking" statement and our augural glyph. In Chol, *wi'il* means "behind" and "later", *wi'ilix* is given as "last" (Josserand and Hopkins 1988: *wi'il* "backward, last"). The "five tun lacking" expression can be translated as "the last five tuns". In the context of the augural glyph, *wi'il* makes sense as "food". Yukatek *wil* alimento "food, nourishment" and *wi'il* "to eat all kinds of food" are related to Chol *we'el* "food in general", Tzeltal and Tzotzil *we'el* "comida". The numeral prefix *ox* is used in Yukatek with the meaning of

"abundance". Even though it does not have an independent entry in the dictionaries, Barrera Vásquez refers to *ox* as abundance in his discussion of the place name Oxx'utskab. *Ox* occurs in many compounds such as *ox numya* "very miserable" where it is used to stress the quantity and abundance of something. "In any case, *ox* surely does not have any directly numerical connotation, but rather has an intensificatory value, the term being attached to various words to add emphasis" (Thompson 1950:129). Our attributive glyph of Chak is best translated, therefore, as *ox wi'il* "a lot of food", "abundance of food".



Associated with K'u, Itzamna, the Waterlily Monster, Chak, and the Jaguar

This augury consists of two signs, the *ahaw* superfix and a suffix which sometimes is written with the sign for the day Men, but more often as the syllable *le* (both are often confused in the Codices). Gods

associated with this augury bring *ahaw-le(l)*, "reign", "royal dignity" (Pío Pérez: *ahaulil* reino, dignidad régia).



Associated with God R, K'awil, God E, and Itzamna

Here we have three signs, the *ahaw* superfix, a *wa* suffix as a phonetic complement, and the main sign *t'zak*, which has a great variety of meanings. In the context of a positive augury, *tz'ak ahaw* could be translated as "eternal kingship"

(*tz'ak* "para siempre"), "enlarged reign" (*tz'ak* "aumentar, añadir"), "generation of kings" (*tz'ak-ab* "abolorio, casta, linaje o generación") and, if Chol is taken into account, "completion of kingship" (Chol *tz'äk* "complete"). In any case, this augury secures a long reign.



Associated with God L and Chak

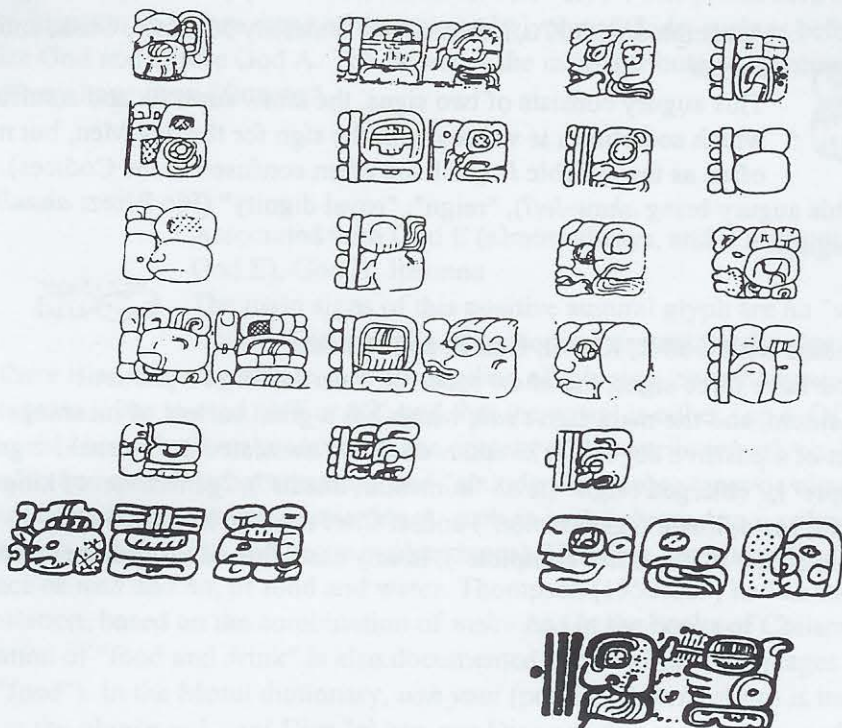
This hieroglyph is probably the principal attribute of God L. Again we have an *ahaw* superfix and a *wa* phonetic complement. The main sign shows a throne covered with a jaguar skin. This augural glyph clearly evokes images of God L sitting on a jaguar throne. In the creation text of Quirigua Stela C, the jaguar throne is planted by the Paddler Gods, who are the companions of God L. The phonetic reading of the throne sign is still under debate; possibly the throne reads *tz'am*, giving *tz'am ahaw* "lord of the throne" or "royal seat" as the translation for this augury.



Associated with God H, K'u, God E, and Itzamna

The reading of this attributive glyph is very problematic. The same hieroglyph occurs in many Classic Period inscriptions. The *yo* prefix can be absent, suggesting that it functions only as a complement. The *ni* suffix is usually present, but there are examples from the codices and from Naranjo where the *ni* suffix is also missing. The only possible interpretation of the main sign is as a logogram beginning with *yo* or *o* and ending in *-n*. The infixed *k'in* sign may have to be read independently; it is also possible that the infixed *k'in* sign and its "carrier sign" constitute a new, integral grapheme with a reading not connected to *k'in* at all. This interpretation is supported by the fact that the *k'in* sign never occurs independently and outside of this construction.

In the inscriptions, our attributive glyph is very often associated with the expression *bolon chan*, "nine sky". A text from Xcalumkin Cornice 1 confirms that this combination must refer to a place, perhaps a sacred place in the sky. This place can be witnessed, as stated in this expression from Naranjo Stela 13. At the same time, this place seems to be associated with the south because it is often mentioned in Quirigua and Copan with a south glyph and



sky sign.

Most often, this glyph occurs in the 9-16-9 formula at Palenque and elsewhere. In this formula, which probably represents a series of supernatural names, the glyph occurs twice, always in the same position.

At Palenque, K'an Hok' Chitam is called *u ka-tal *-ni*, "the second *-ni" of Hanab Pakal, suggesting that the glyph can also represent some title or noun referring to succession or parentage.

If the *yo* prefix and the *ni* suffix represent nothing more than mere phonetic complements, the reding for the main sign could be *on*. *On* has a variety of meanings in the Yucatekan and Cholan languages:

Yukatek: *onel* "parent in direct line; distant parentage" (pariente en consanguinidad, pariente transversal, parentesco muy lejano); "progenitor". This would fit in the Palenque texts, where K'an Hok' Chitam is the second son of the progenitor, Pakal.

This Yucatek word is related to the Lakandon term *onen* which describes an animal name and kin relation somebody inherits through the patrilineage.

The possessed form, *yonel* is also recorded in Yucatek dictionaries as "relative" (pariente).

As a title, *Ah On* is recorded in many Yucatek dictionaries for "flatterer, palliator; somebody who talks bluntly" (truhán y chocarrero, bien vestido, pulido y galano, decidor de gracias, bizarro, pulido) but also a gentleman and person of nobility (gentil hombre, entonado). This translation would fit in those contexts where the glyph is used as a title, and perhaps also when it is used as an attributive glyph.

In Chol, *on* is the root for "many" (bastante). Combined with an *-iyi* suffix it becomes an adverb for "a lot of time ago" (hace mucho tiempo). Is it possible that the glyph in the 9-16-9 formula refers to a multitude, perhaps of Gods?



Associated with Chak, K'u, God L, God M, the Jaguar, and Itzamna
This is a positive augury which has no specific association with one of the Gods. David Stuart (1987) deciphered this augury as *yu-tzi-li*, *y-utzil*, "the goodness of". It is the possessed form of the root *utz* "good" (Motul *utzil* "bondad, virtud y cosa buena", *yutzil* Dios "la bondad de Dios").




Associated with Goddess I

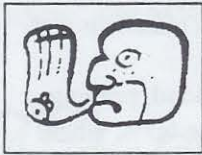
This is a relatively rare attributive glyph which is used only for the Young Moon Goddess and the (female?) zoomorphic partner of Itzamnah on Dresden 14c. The hand sign with the infixed volute represent, like in Classic Period inscriptions, the logogram *yal*, which among other meanings translates as "child of". The occasional *ya* prefixes and *la* suffixes support the validity of this reading in the Codices. The word for "child" in Yucatec is *al*, the prefixed *y-* supplies the possessive pronoun "her". An unresolved question remains the ne tail which is attached to the glyph. It may indicate that the glyph is based on the verb *alankil* "to give birth". Alternatively, it is possible that the entire glyph stands as a logogram for the expression *almehen* "children, both of the father and of the mother", where the *ne* would serve as a phonetic complement.



Associated with God R

This attributive glyph occurs only three times in the three major codices. In the Dresden Codex, it is used as an attributive glyph for God R, in the Madrid Codex its context is unknown, and in the Paris Codex it shows up in the prophecy for the K'atun 7

Ahaw. The glyph shows two maize ears coming out of a  sign. The number three *ox* may have the same "augmentative" function here as in the *ox wi'il* "abundance of food" compound. God R is a rare and poorly understood God whose face is used as the head variant for number eleven in the Classic Period. Whatever his name and function is, he is associated with this attributive glyph which certainly refers to "three" or an "abundance of" sprouting maize plants.



Associated with K'awil

This attributive glyph does not show up in Zimmermann's original list, but on Dresden 7a it occurs in the same position as other attributes, so we have included it in our discussion. This attributive glyph is very rare and only associated with God K (K'awil). The hand in front of the head is the sign for the syllable *ke*. In Primary Standard Sequences from the Chochola area, the hand with the head is replaced by the three syllables *ke-le-ma*. *Kelem* is the Yukatek word for "strong, young" (*fuerte, recio, juvenil*) and *ah kelem* is given as "young and strong man at the age of twenty" (*varón fuerte y recio, como de veinte años*). K'awil is often addressed as a particularly young god. According to the inscriptions from the Palenque Cross Group, he is the lastborn of the three Gods.

There are further hieroglyphs which occur in the position of attributive glyphs. They are unique and often have not been deciphered. They will be discussed when they show up in the text.

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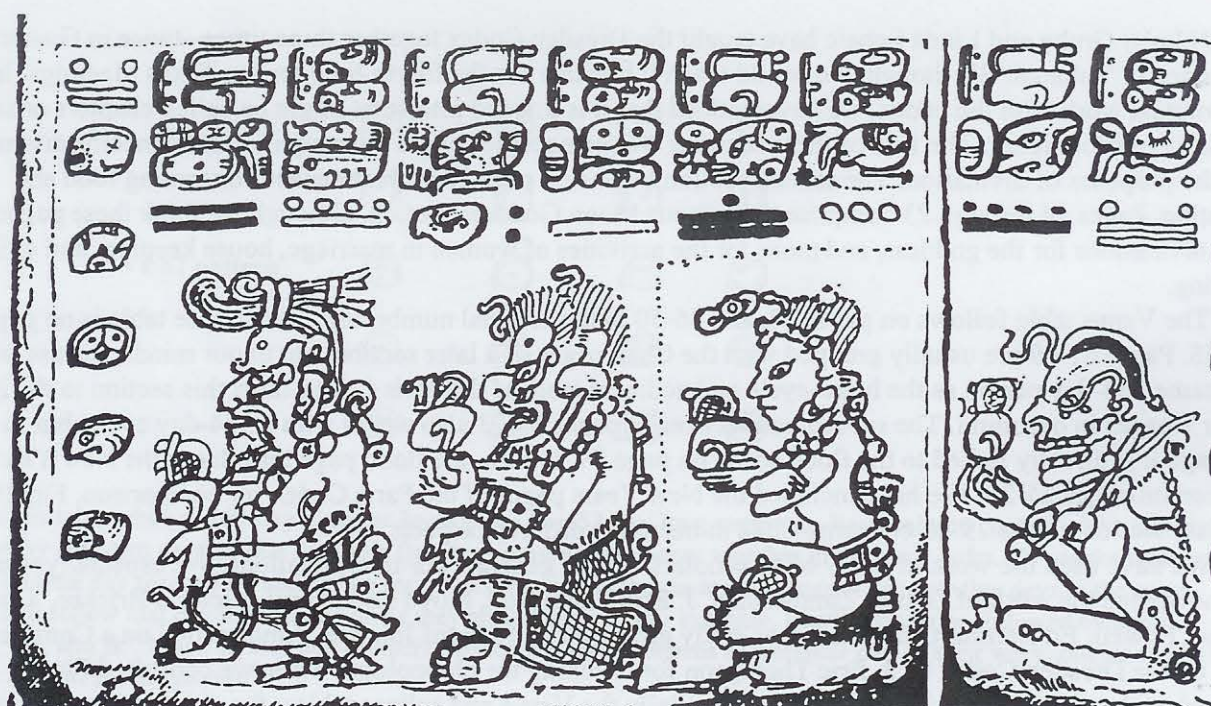
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The Almanacs



by Linda Schele and Nikolai Grube

The Dresden Codex

Introduction

Nikolai Grube and Linda Schele have taught the Dresden Codex together three times--twice in Guatemala and once in Yukatan. We thought we would teach it together for the fourth time for the Texas Meetings. In our mutual work with the codex, we have noticed that it is divided into what might be called chapters or sub-areas of subject matter. The first of these sections we see occupies pages 4 through 12 and concerns divining for the purposes of divination. The second section begins on page 13 with almanacs concerning food and planting. Pages 14 through 23 comprise the famous Moon Goddess section, although we think these pages are less divinations for the goddess, and more for the activities of women in marriage, house keeping, and child rearing.

The Venus table follows on pages 24, and 46-50 in the original numbering. The eclipse table is on pages 51-58. Pages 61-69 are usually grouped with the Chak pages of a later section, but in our minds, the use of the same 364-day period as the lunar-cycle and zodiacal table of the Paris Codex links this section to the New Year's pages in our mind. The subsequent section on pages 69-73 also works with a 364-day cycle, but in that passage it is directly linked to the flood scene on page 74. In turn, the flood page introduces the New Year section on pages 25-28. We have included the New Years pages of the Paris Codex for comparison. Finally, the last section, pages 29-45 concerns Chak in his many different aspects.

We have used the work of many other scholars to help generate our interpretations. We especially want to acknowledge the work of Gunter Zimmerman, J. Eric Thompson, Floyd Lounsbury, Victoria Bricker, Christopher Powell, Ed Barnhart, and the Texas study group led by Richard Johnson. Linda relied on a Commentary on the Dresden Codex by J. Eric Thompson for checking the chronology, while we consulted Floyd Lounsbury's extensive work on the codex, especially the Venus and eclipse tables, for our own commentary. We could not include all of their ideas and interpretations and recommend their work highly to people who have interest in pursuing their study of the codex.

The work of Ernst Förstermann is fundamental to anyone working with the codex. All of us should be grateful for the remarkable chromo-lithographic reproduction of the codex he commissioned during his lifetime. Without the Försterman copy, none of us would not be able to work with the Dresden as we do because of the damage suffered during the bombing of Dresden during the Second World War. Linda considers herself especially lucky, since Floyd Lounsbury gave her the gift of a Försterman copy. We scanned from her copy when the corrected Villacorta included in the Graz edition was not adequate.

We have not attempted to include every almanac in this workbook. When the texts were too eroded to read, as is often the case in Register A, we skipped to almanacs that offered us recoverable information. Moreover, some areas of the codex did not hold interest for us. Those sections are included in the Thompson's *Commentary* and can be studied using his analysis.

Calendar Shortcuts for the Dresden

The tables below help in making quick calculations within a 260-day almanac. Ed Barnhardt developed the two lower tables in a paper he wrote for a seminar on the Dresden Codex in 1994. His initial work is published in the Texas Notes.



In this table the days are arranged in two rows of ten. Counting forward and backward is very easy since days separated by ten days are arranged in vertical pairs.

5 x 52 pattern



Use this table when a 260-day almanac breaks into five 52-day long segments. Each column contains days that are separated by fifty-two days so that the same five days must always occur together in the same order. To use the table, simply find the day reached by adding the recorded distance number in any almanac. The other five days in the same column will follow that day in the same order they appear above. For example, Ix will always be followed by Kimi, Etz'nab, Ok, and Ik'. Maya scribes and diviners memorized these patterns as a regular part of their work, but we modern students need to see the pattern

4 x 65 pattern

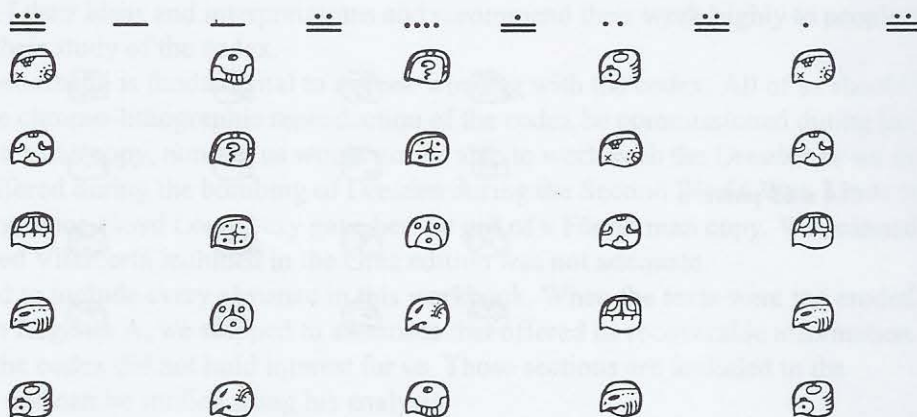


Use this table when a 260-day almanac breaks into four 65-day long segments. Each column contains days separated by 65-day intervals. As above, simply find the first day reached by the recorded distance numbers. It will occur with the other days in the column in exactly the order they appear here. For example in this pattern, Ix will always be followed by Kawak, K'an, and Muluk.



<i>ch'akba</i>	<i>k'a wah ha</i>	??	??
<i>u tuch</i>	<i>u tuch?</i>	<i>Sak Ixik</i>	??
<i>hun ahaw</i>	<i>yatal</i>	<i>yatan</i>	<i>yatan</i>
??	<i>Nal</i>	??	<i>Sak Ixik</i>

he axed	surfeit of	??	??
his navel	food	Moon	??
Hun Ahaw	his navel	Goddess	is the wife
[bad]	the wife of	is the	of
	the Maize	wife of	the Moon
	God	[bad]	Goddess





u chuy
God H
Chak Chel
ahawle

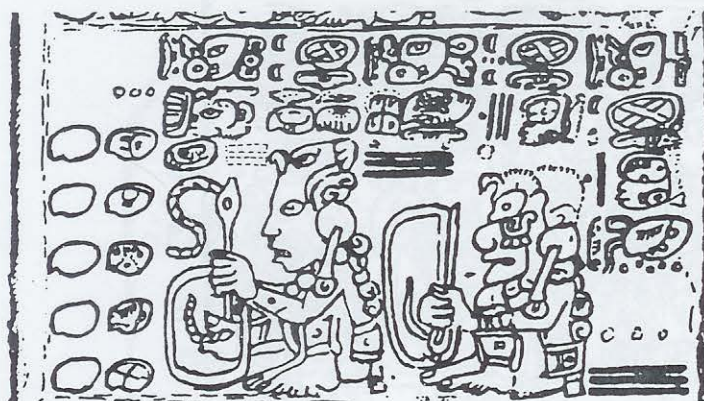
u chuy
yatan
Kimil
??

she is sewing
 with God H
 Chak Chel
 reign

she is
 sewing
 the wife of
 the Death
 God
 [bad]



Here the scribe drew in the cartouches for two rows of day signs but only used one.



u chuy
yatan
Nal
k'a wah ha

u chuw
yatan
Itzamnah
waklahun ?-ni

u chuy
yatan
wak-?
u-??

she is sewing
the wife of
the Maize God
surfeit of bread
and water

she sews
the wife of
Itzamnah
?? [

she is sewing
the wife of
?? [bad]





u k'am
u pik
Uh Ixik
yal ne

u pik
u k'am?
Kimil
??

She receives
 her skirt
 the Moon Goddess
 children

The skirt
 he receives
 the Death God
 [bad]



Dresden 3a

1

hit it is opened
??hul ??bad
xul men end of work
u muk its divination
yatal the payment of
lob ruination

3

??hul bad

2

yatal
Nal
k'a ha wah
sak tz'ak ahaw

the payment
of the Maize God
brings surfeit of food and water
royal succession



4

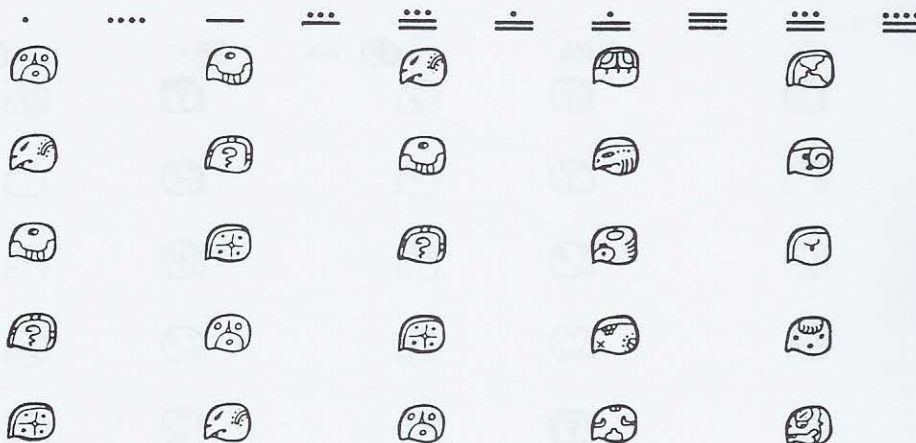
u hit
yatal
Chak
ox wi'il

it is opened
the payment
of Chak
abundance of food

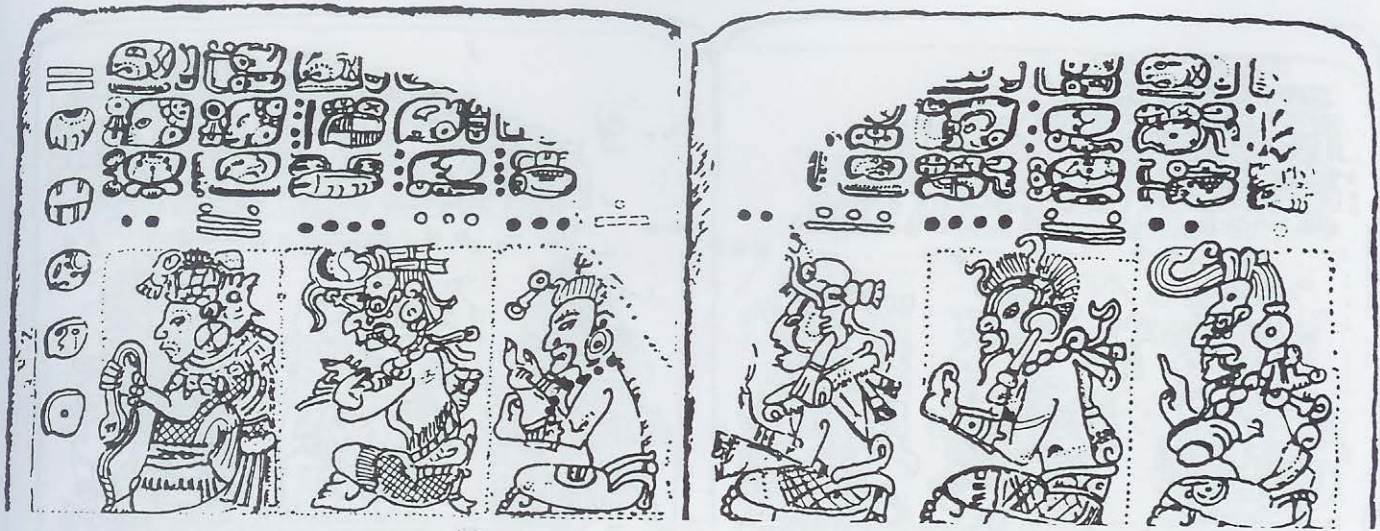
5

chukah
Hun Ahaw
u muk
yatal

he was caught
Hun Ahaw
his divination
his payment



Hit means "to open, leave out, free, take out" (*hitah* "abrir cartas, deshaver libros, desplazar, desatar, aflojar, desenvolver, desenredar"). The main sign could also be *ch'o*, but a appropriate translation for *ch'ot* or *ch'ok* has not yet been found.



pekah
tu chich
God H*
God H
matzil
u muk

pekah
[tu chich]
Bolon Tz'a Ahaw
Chak
hel?
ox wil

[pekah
tu chich]
???
???
Kan Pawahtun
???

[pekah
tu chich]
???
???
???
u muk

pekah
tu chich
K'u
ox wi'il
tz'ak ahaw
yutzil

pekah
tu chich
K'in Ahaw
wuk ??
k'ak' te tun
xul mehen

he reads
in his prophecy
God H*
God H
nothingness is his
divination

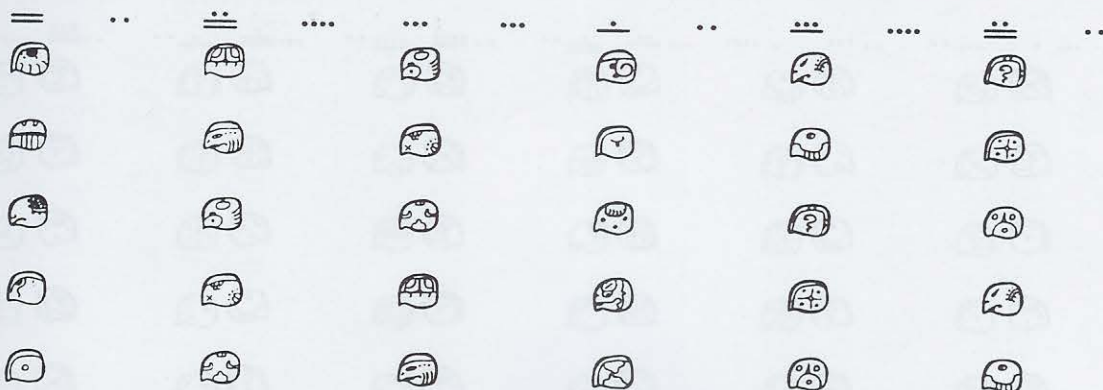
he reads
in his prophecy
Lord who gives
unnumerable
things
Chak
abundance of food
royal succession
good things

[he reads
in his prophecy]
???
???
???
God N

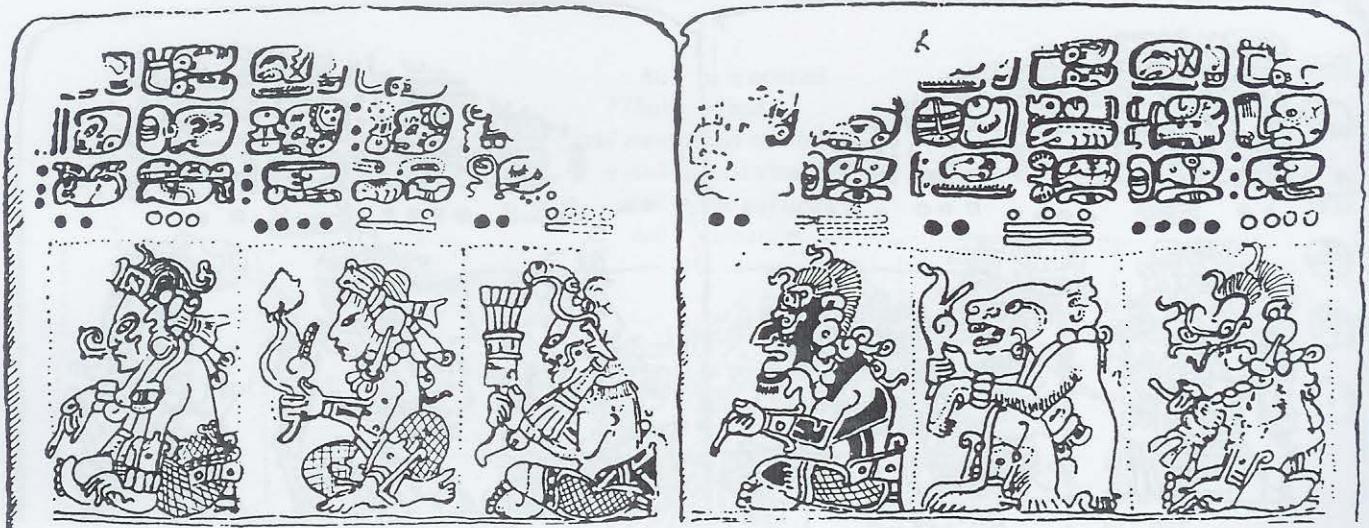
[he reads
in his prophecy]
???
???
???
his omen

he reads
in his prophecy
God
abundance of food
royal succession
good things

he reads
in his prophecy
Lord Sun
fire wood stone
end of work



This large chapter divides the 5x52 days into twenty small sections. All major male Gods of the Codices are mentioned in this chapter. Each God only occurs once. The topic of this chapter is *pekah tu chich*. The main sign of the verb is Landa's *pe*. In Yukatek, *pek* is the verbal root for "to move, to stir". It is used in the Chilam Balam books to describe the movement of the planets. In the combination *pek ol* it means "to suspect, doubt". *Pektzil* is given as "fama buena o mala, utzul pectzil, si es buena" in the Motul dictionary. In Chol, *pejkan* is given as "to read". All of these translation can be made to fit in this context. We follow here a suggestion by Werner Nahm who interpretes these glyphs as a reference to the reading of the auguries in the Codex. The second glyph is based on the word *chich*, which



pekah
tu chich
Buluk ?
?-xi
ox ??
tz'ak ahaw

pekah
tu chich
God H
ox ?
ox wi'il
k'a ha wah

[pekah
tu chich]
God A
????
??hu

[pekah
tu chich]
???
God L
????
nikil

[pekah]
tu chich
Tzul
xul men
u muk
matzil

pekah
tu chich
K'awil
kelem
nikil
ox wi'il

he reads
in his prophecy
God R
?
many sprouts
royal succession

he reads
in his prophecy
God H
Three ..
abundance of
food,
surfeit of water
and bread

[he reads
in his prophecy]
God A
???
???
bad wind

[he reads
in his prophecy]
God L
???
???
flowers

[he reads]
in his prophecy
the dog,
end of work
is the divination
nothingness

he reads
in his prophecy
K'awil
the youth
flowers
much food



in Yukatek means "theme of a prayer; reason; central message" (*chich* "palabra o razón", "el tema del predicador o lo que el capitán repite muchas veces en la guerra o el que tiene cuidado de los que trabajan"). Lounsbury suggested this reading in the early seventies.

* Based on the particular headdress and earpool, Karl Taube has identified this version of God H as the Dresden Codex manifestation of K'uk'ulkan. Andrea Stone has proposed that God H is the personification of *sak nik*, "white flower."



pekah
tu chich
mas*
??
lob
u muk

pekah
tu chich
Chak Bolay
yutzil
k'a ha wah
hel

[pekah
tu chich]
K'uch
???
xul men

[pekah
tu chich
Itzamnah]
nikil
???
yutzil

pekah
tu chich
ox ?-na**
lob
??hu
xul men

pekah
tu chich
Nal
k'a ha wah
ox wi'il
yon

he reads
in his prophecy
the Goblin
??
bad
is his divination

he reads
in his prophecy
the small Jaguar
good things
surfeit of bread and
water
recompense

[he reads
in his prophecy]
the Vulture
end of work

[he reads
in his prophecy
Itzamnah]
???
good things

he reads
in his prophecy
God A'
bad
end of work

he reads
in his prophecy
the Maize God
much food
relative?



* Christian Prager has suggested that this hieroglyph supplies the Codex version for the term *mas*. In the Classic Inscriptions, dwarfs are called *mas*. In contemporary Yukatek Maya from Belize, *mas* is the word for dwarf and goblin. It is the name given to Alfonso Morales by the Maya workmen from San Antonio, Cayo.

** This version of the name of God A' is very similar to a common Classic Period title, *ox ch'ak-kab-na*. In Palenque and Yaxchilan it seems to refer to a blindfolded God with avian features. Another very similar title occurs in the name of the 14th ruler of Copan.



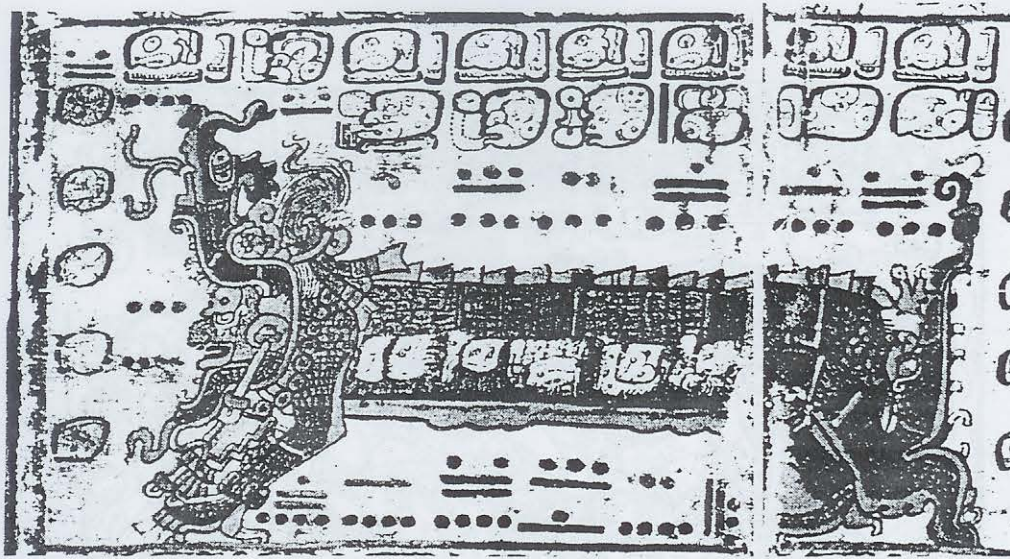
pekah
tu chich
Oxlahun Kaanal
kuy
u muk
tok' te bah

pekah
tu chich
Kimil
wak waktal
??hu
u muk

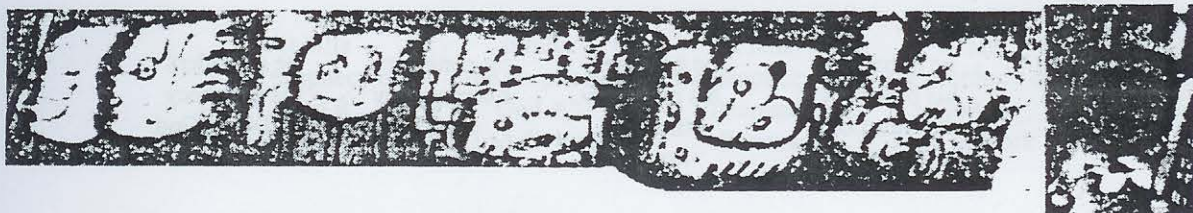
he reads
in his prophecy
the 13th heaven
owl
his divination is
penance

he reads
in his prophecy
Kimil
sixth?
bad wind?
is his divination

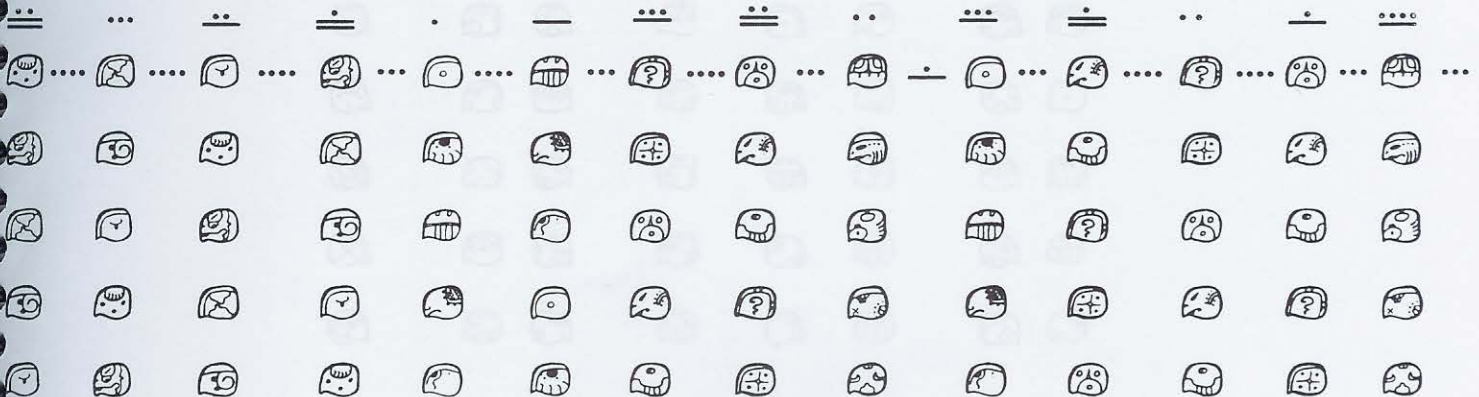




<i>pekah</i> <i>k'u</i>	<i>pekah</i> <i>Itzamnah</i>	<i>pekah</i> <i>k'u</i>	<i>pekah</i> <i>God H</i>	<i>pekah</i> <i>Kan</i>	<i>pekah</i> <i>God A</i>	<i>pekah</i> <i>Chak</i>
				<i>Pawahtun</i>		
reads god	reads <i>Itzamnah</i>	reads god	reads <i>God H</i>	reads <i>Kan</i>	reads <i>Death</i> God	reads <i>Chak</i>



<i>Kimil</i> Death God	<i>?? hu</i> bad wind?	<i>xuk men</i> end of work	<i>u muk</i> bad omen	<i>lob</i> ruination	<i>k'ak' te tun</i> punishment
---------------------------	---------------------------	-------------------------------	--------------------------	-------------------------	-----------------------------------



This almanac uses the same *pekah* verb as the previous almanac. The gods apparently read the divinations along the body of the Cosmic Crocodile, a creature associated with the Milky Way both by the Maya and the Aztec. An old god, perhaps *Itzamnah*, emerges from the open mouth of the crocodile, while its tail transforms into another mouth. A *sak nik*, "white flower," sign sits on the nose of the rear head.



u tum
u chich
K'in Ahaw
xul men

u tum
u chich
Itzamnah
nikil

u tum
u chich
God H
yon

u tum
u chich
Kimil
??

he considers
his prophecy
the Sun Lord
end of work

he considers
his prophecy
Itzamnah
flowers

he considers
his prophecy
God H
relatives?

he considers
his prophecy
the Death God
??



Tum in many combinations means "to think, to consider" (considerar, probar, experimentar, dar orden; *tumtum* oltah "considerar, imaginar entre si, racionar, especular, trabajar con la imaginación). *Tumtum ol* is given as "to make a divination" in the Motul dictionary (adivinar). Four kings of Caracol carried the name *Tum Ol K'inich*, "Sunfaced Diviner".



hoch'
u chich
Buluk ?
tz'ak ahaw

hoch'
u chich
God A'
u muk

u hoch'
u chich
Itzamnah
nikil

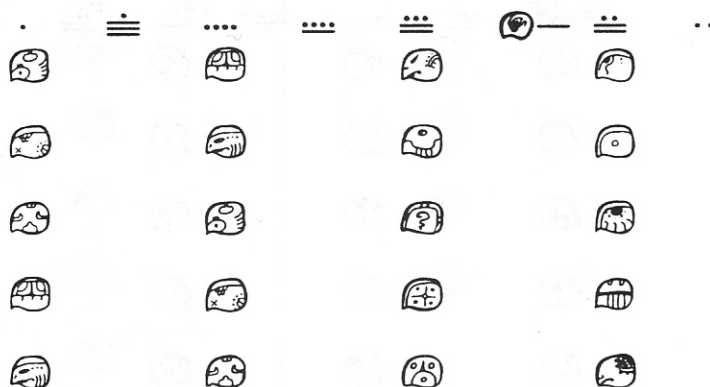
u hoch'
u chich
God Q
xul men

it falls
the prophecy of
God R
royal succession

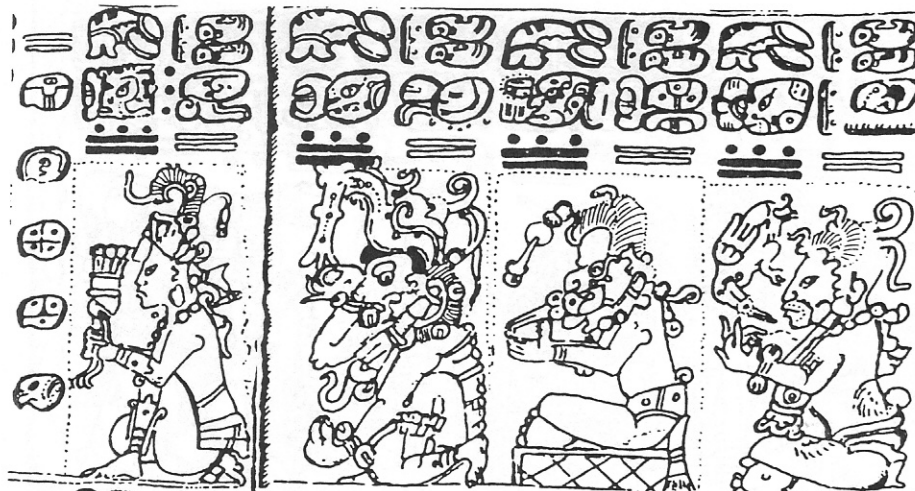
it falls
the prophecy
God A'
his bad divination.

it falls
the prophecy of
Itzamnah
flowers

it falls
the prophecy of
God Q
end of work



The word *hoch'* certainly has a double entendre here. *Hoch'* means "to drill", which is what the Gods are doing. At the same time, *hoch'* is given as "let something fall or glide to the ground like a towel". This could be the movement made by daykeepers when throw down the handful of divination beans, or a bundle which contains the beans and crystals used by the daykeeper.



tz'un
u chich
Nal
ox wi'il

tz'un
u chich
Kimil
???

tz'un
u chich
Itzamnah
nikil

tz'un
u chich
Yax Balam
u muk

It begins
the prophecy of
the Maize God
abundance of food

It begins
the prophecy of
the Death God
??

It begins
the prophecy of
Itzamnah
flowers

It begins
the prophecy of
Yax Balam
bad divination

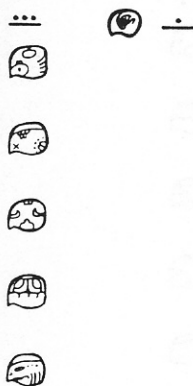


Here, the word *tz'un* refers to the beginning of the divination, note Yukatek *tz'unul* "comenzarse algo." At the same time, like in the preceding chapter, a play of words is employed. *Tz'unun* is the word for hummingbird in Yukatek. In the last two pictures, the gods are shown as or with hummingbirds



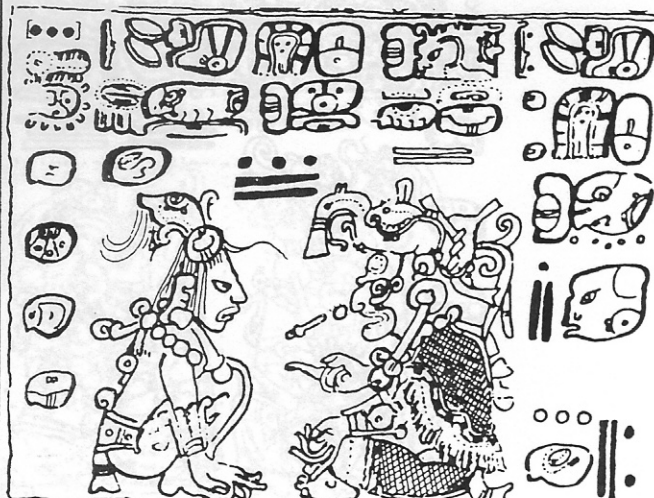
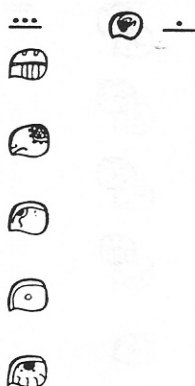
nuch
hol
Itzamnah
nikil
leti ahaw
inah

they put
their heads together
Itzamnah
flowers
and ??
seeds



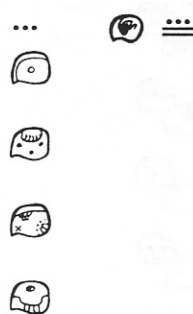
nuch
hol
Kimil
oxlahun kuy

they put
their heads
together
the Death God
and the 13 Owl.



u nuch
hol
Itzamnah
nikil
Nal
k'a ha wah

they put
their heads together
Itzamnah
flowers
and the Maize God,
surplus of bread and water



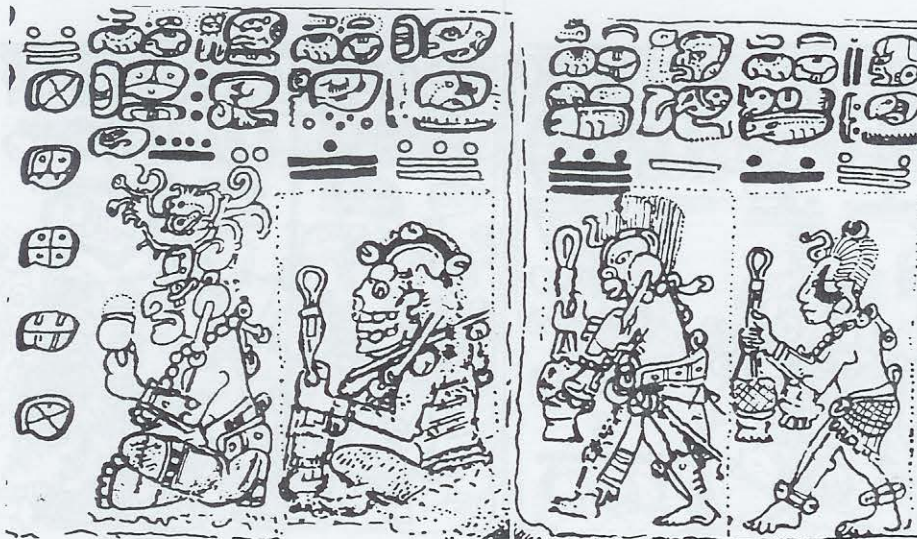
u nuch
u hol
Kimil
God Q

they put
their heads together
the Death God
and God Q



In the late sixties, Floyd Lounsbury deciphered this verb here is *nuch* "to put heads together" (*juntar cabeza con cabeza*). He thought the second glyph was *hax bul*, "to throw dice," but subsequent decipherments have shown that it is *hol* is Yukatek for "head". It seems that the gods put their heads together in order to talk about the outcome of the divinations. This phrase is identical to the English figure of speech, "to put your heads together," as a metaphor for working together.

The second almanac has the number with the day signs spelled phonetically as *o-xo* for *ox*, "three." The first of these almanacs is divided into 5 x 52, while the second one is 4 x 65.



k'a ha wah
Itzamnah
nikil
ox wi'il

k'a wah ha
Kimil
?? hu
u muk

k'a wah ha
K'u
ahawle
yon

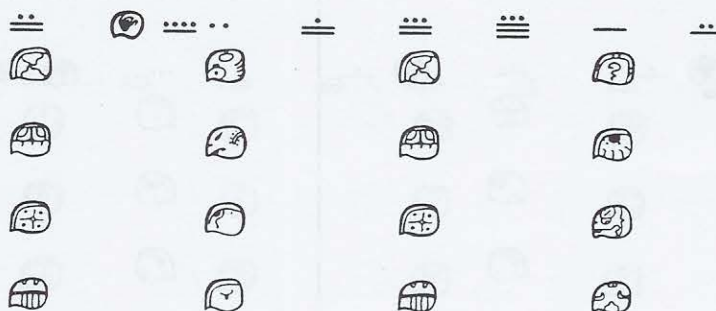
k'a wah ha
God Q
xul men
u muk

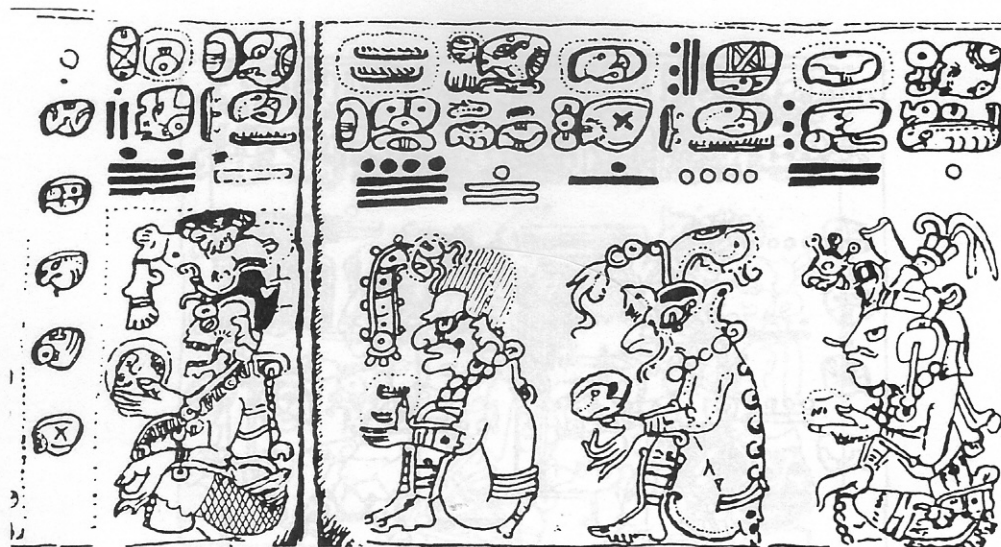
surplus of bread
and water
from Itzamnah
flowers
abundance of food

surplus of bread
and water from the
Death God
?? bad winds
is his divination

surplus of bread
and water
from God
reign
relatives

surplus of bread
and water
from God Q
end of work
is his divination





mol tok'
Kimil
God Q
u muk

mol kaka[w]
Itzamnah
nikil
k'a wah ha

mol mu
oxlahun kaan
kuy
u muk

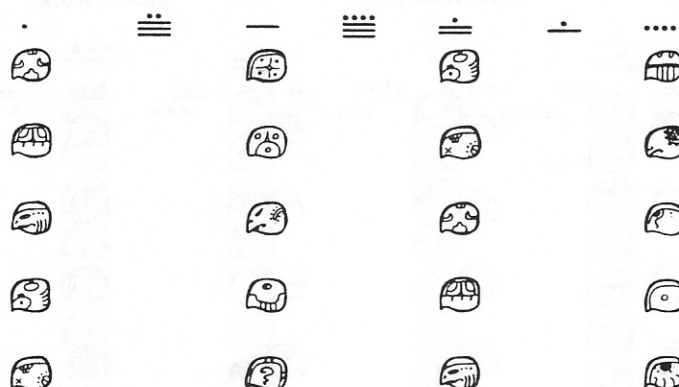
mol wah
God H
ox wi'il
xul men

he collects knives
the Death God
God Q
is his divination

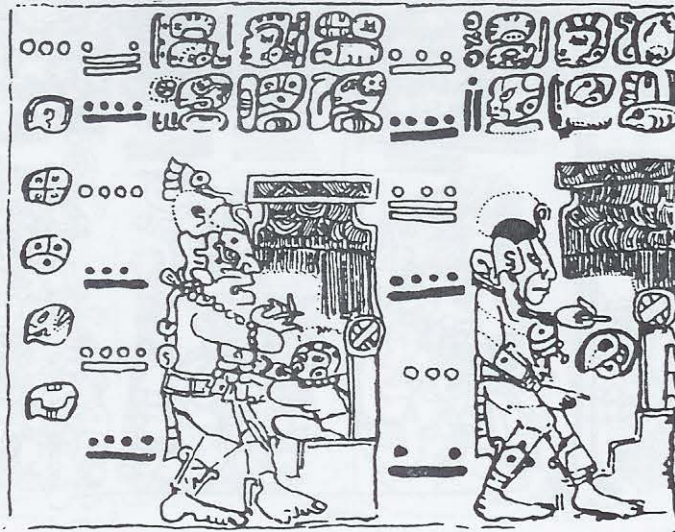
he collects kakaw
Itzamnah
flowers
and surplus of bread
and water

he collects
bride gifts?
the thirteenth sky
owl
is his divination.

he collects bread,
God H
abundance of
food and water
end of work.



The verb here is *mol* "to collect, join, bring together" (*juntar, allegar, ayuntar*). The items collected are offerings which seem to be specifically associated with the gods. The item held in the hand by the owl could be an abbreviation of *muhul*, "bride gift", but other translations may be possible.

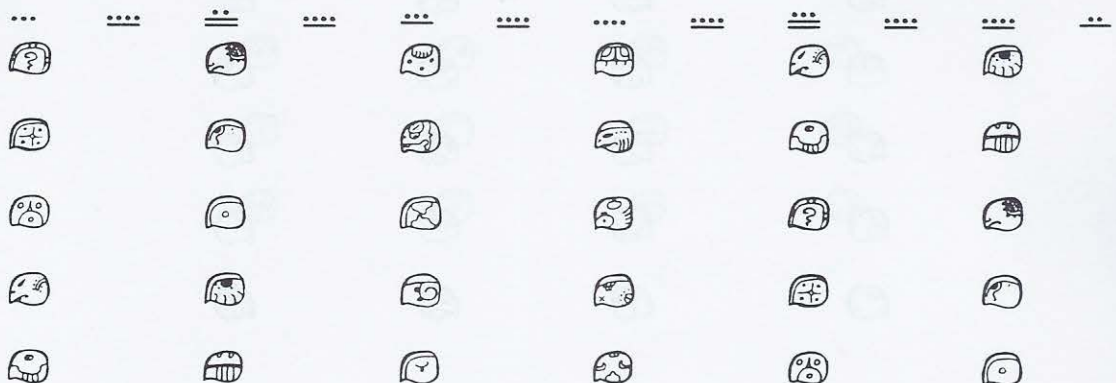


*u tek'ah
nah
Itzamnah
nikte
ahawle
yonil*

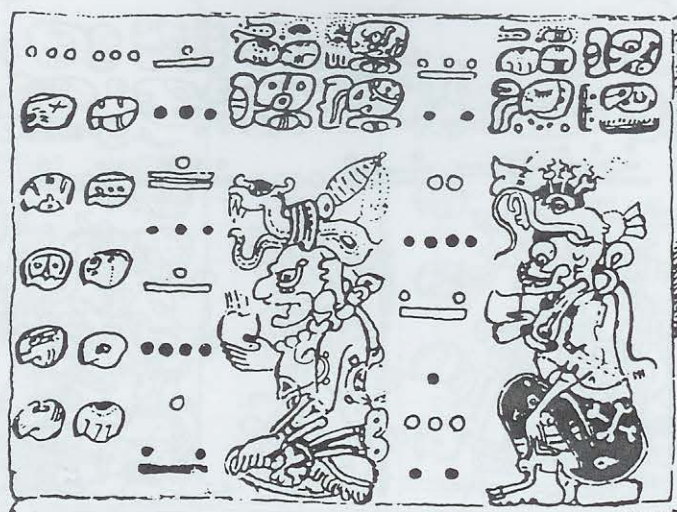
*u tek'ah
nah
God Q
u muk
lob
xul men*

he places his
foot in the house
Itzamnah
flowers
reign
and relatives?

He places his
foot in the house,
God Q
his divination
is bad,
end of work.



The verb root is spelled with the sign which in Landa's alphabet occupies the place for *D*. It is either a plain or a glottalized *te/t'e*. The same hieroglyph is found in a similar context on the Dumbarton Oaks panel from Palenque, where the next glyph is *tu witzil*. The most likely translation is "to step on", based on Chol *tek'* "step on" and *chek'* "medir a pies o pasos." The dates alternate between the two texts with columns 1, 3, and 5 associated with the left text, and columns 2, 4, and 6.

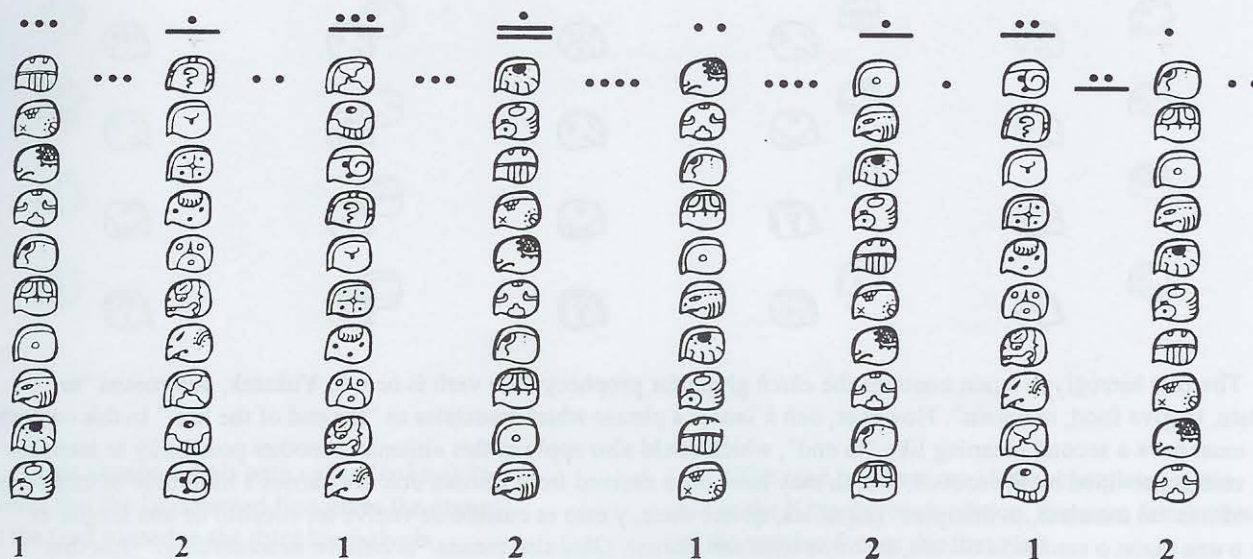


k'a wah ha
Itzamnah
nik
yon

k'a wah ha
Kimil
?? hu
u muk

surplus of bread
and water from the
Itzamnah
flowers
relatives

surplus of bread
and water from the
Death God
?? bad winds
is his divination

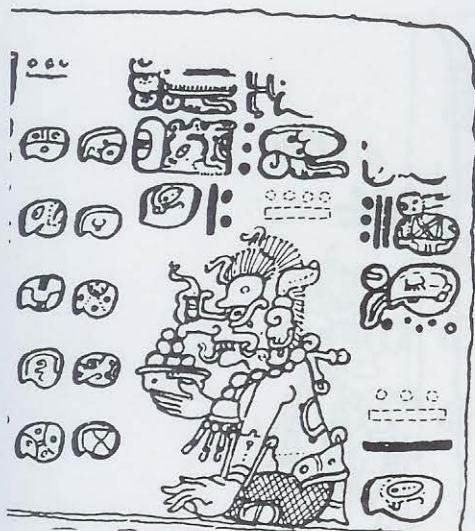


Itzamnah and the Death God appear with the breasts of women in this almanac. The second of the texts repeats one from Dresden 5C.

<p>[missing] [Itzamnah] nikil</p>	<p>[missing] u muk</p>	<p>[och tu ??] God H tutal ox wi'il</p>
<p>[missing] [Itzamnah] flowers</p>	<p>[missing] is his divination</p>	<p>he maintains? God H visit to the Milpa much food</p>
<p>he maintains? the Death God bad winds? his prophecy</p>	<p>he maintains? his thoughts, the Maize God surplus of bread and water flowers</p>	

The first hieroglyph again contains the *chich* glyph for prophecy. The verb is *och*. In Yukatek, *och* means "to sustain, to give food, maintain". However, *och k'in* is a phrase which translates as "the end of the life." In this context, *och* must have a second meaning like "to end", which could also apply in this almanac. Another possibility to interpret this verb is provided by the root *ok*, which may have been derived from Cholan *och*. *Ok* carries a multitude of meanings, one of it is "to translate, to interpret" (significa, quiere decir, y esto es cuando se vuelve un vocablo de una lengua en otra o una razón o sentencia oscura, en otros términos claros). *Okol* also means "to believe in something." Another possibility is *hoch*, with a weak *h*. The Motul lists *hoch* as "to paint or transcribe a copy." This almanac could have been use by scribes who copies codices. All of these meanings could fit into this context.

In the last *t'ol*, the object is not *chich* but *tu-ku-ba/ma*. We think this glyph is related to Yukatek *tuklah* "to believe in something., to think, to imagine". The *ba* part probably is added for *bal*, "thing," in order to spell *tuk-ba*, "thought."

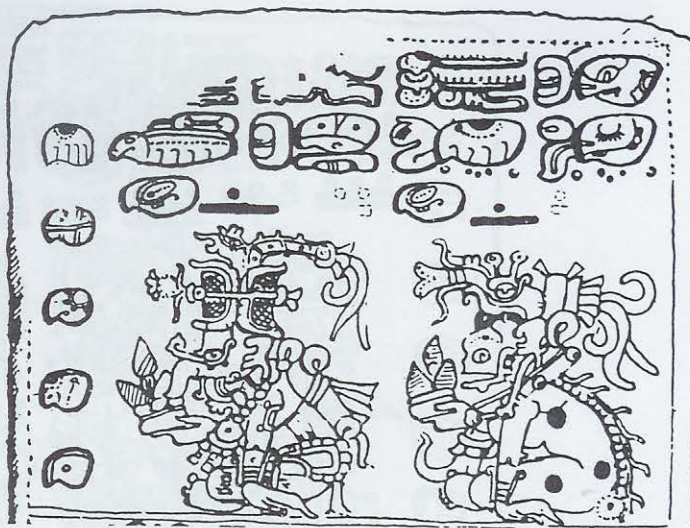


och kakaw
K'awil
Nal
ox wi'il

[missing]
Kimil
oxlahun kaanal
??

he feeds with kakaw
K'awil
the Maize God
abundance of food

[missing]
the Death God
the Kuy owl
??

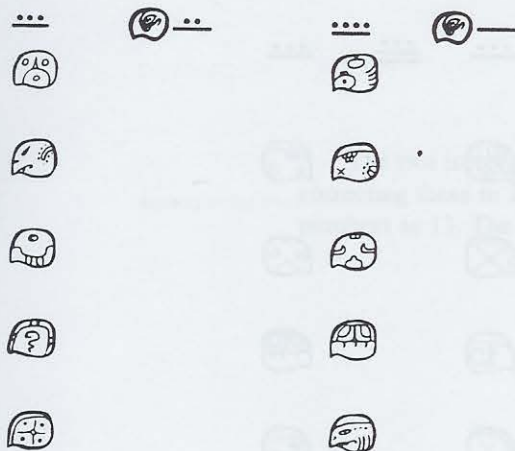


och kakaw
??
ahawle
nikil

och kakaw
Kimil
lobal
??

He feeds kakao
??
reign
and flowers

he feeds kakao,
the Death God
badness
??



This almanac deals with cacao (*kakaw*). It seems that the God named first gives the cacao to the God named in the third hieroglyph.

(The read numbers are almost completely gone, but in the Kingsborough edition, there are faint traces of the number 9 over the first *t'ol*)



nohol
u men?
u pe
Nal

nah
u men?
u pe
God H

[missing]
u pe
Kimil

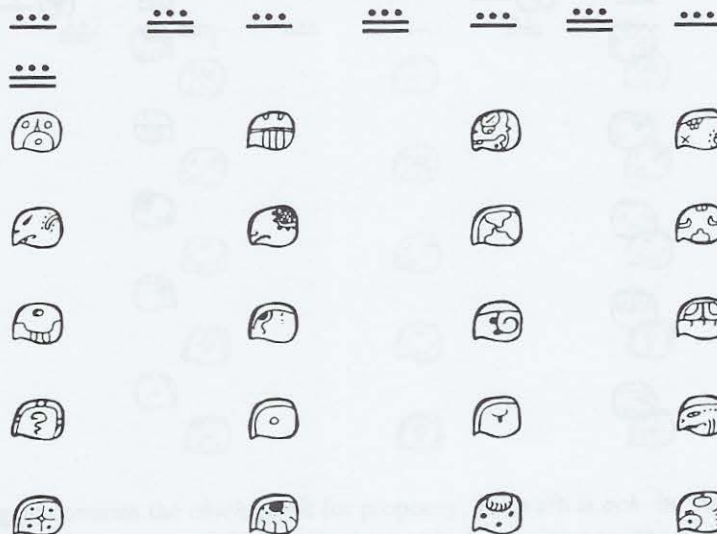
u pe


the south
his work
he brings it
the Maize God

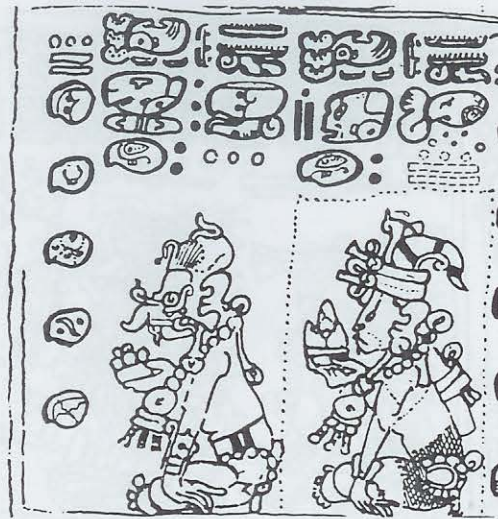
the north
his work
he brings it
God H

he brings it
the Death God

he brings it



The verb seems to be in the second position. The main sign looks similar to the day sign *men* . The *na* suffix seems to confirm the assumption that the main sign is *me* or *men*, providing *men* "occupation, do something, understand" as a possible translation. The third glyph is based on Landa's *pe*, note Yucatek *pe* "bring or carry in the hands".



ochi
u kakaw
Chak
ox wi'il

ochi
u kakaw
God Q
lobal

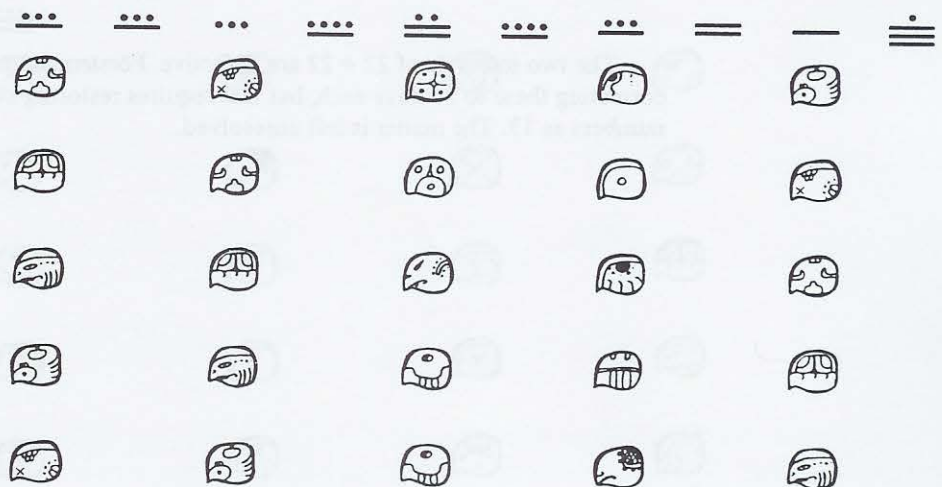
he feeds
with his cacao
Chak
abundance of food

he feeds
with his cacao
God Q
ruination

The two intervals of 22 + 22 are defective. Förstemann proposed correcting these to 26 days each, but that requires restoring both red numbers as 13. The matter is left unresolved.



<i>petah</i> <i>K'awil</i> <i>ox wi'il</i> <i>tz'ak ahaw</i>	<i>petah</i> <i>K'in Ahaw</i> <i>k'ak' tun te</i> <i>lobal</i>	<i>petah</i> <i>Nal</i> <i>k'a ha wah</i> <i>tu chich</i>	<i>petah</i> <i>tu chich</i> <i>Ta' hol</i> <i>u muk</i>	<i>petah</i> <i>tu chich</i> <i>max</i> <i>ox wi'il</i>
he turns it K'awil much food royal succession	he turns it the Sun God fire to wood ruination	he turns it the Maize God his prophecy is surplus of food and water	he turns his prophecy of the Vulture his divination	he turns his prophecy the Spider Monkey much food



The last two sentences show that the full verbal phrase in all instances must have been *petah u chich*. Again, *chich*, the prophecy is the thematic subject of this almanac. The verb seems to be *pet* "to make round, circular movements." In connection with the subject of prophecies, the only explanation we find is that this describes the movement the daykeeper makes with his hands when he rearranges the beans for a new divination. We have used turn for this motion since there is not a precise verb that describes this round movement. The same verb, *pet*, also shows up in dedication texts at Chich'en (Akab Dzib) and Xcalumkin in contexts which are not yet understood.



petah
Kimil
??
u muk

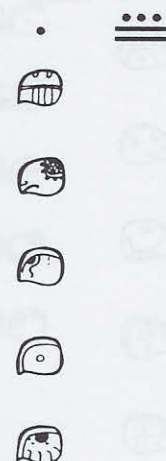
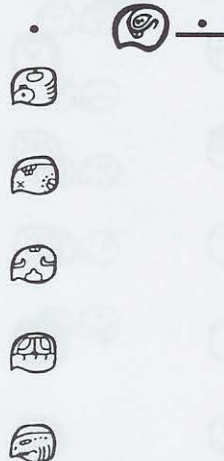
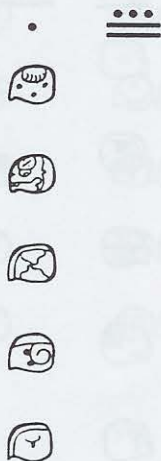
petah
God H
k'a wah ha
nikil

petah
Kimil
??
u muk

he makes it
round
the Death God
??
is his divination.

he makes it
round
God H
surplus of
bread and
water
flowers

he makes it
round
the Death God
??
is his divination





u mak'
wah
Kimil
??

mak'aw
wah
Nal
tz'ak ahaw

mak'aw
wah
K'u
ox wi'il

mak'wa
wah
God L
yutzil

mak'aw
wah
God Q
u muk

mak'aw
wah
Itzamnah
nikil

he swallows
bread
the Death God
??

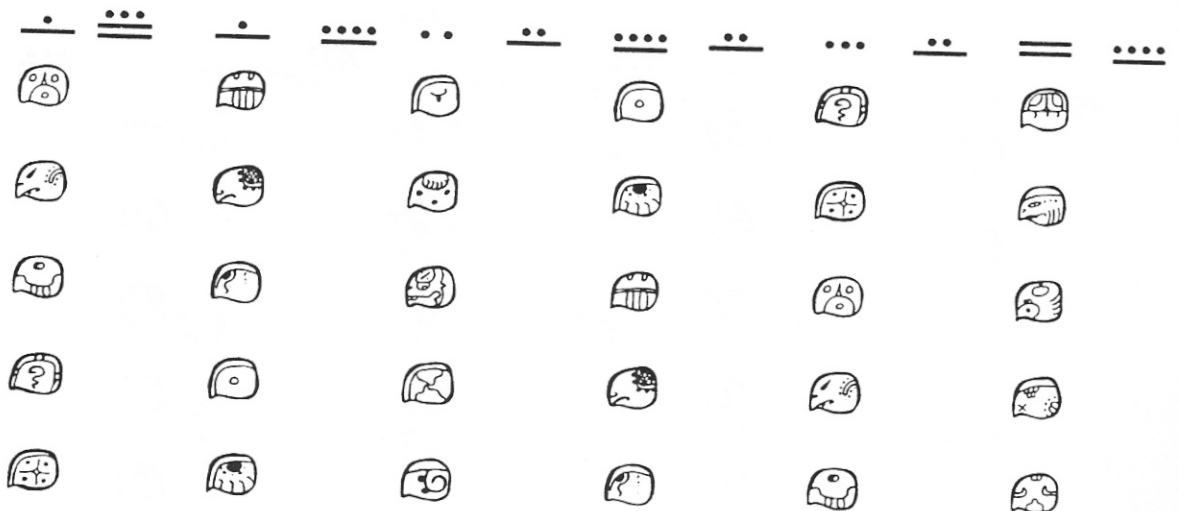
he swallows
bread
the Maize God
royal succession

he swallows
bread
God
much food

he swallows
bread
God L
goodness

he swallows
bread
God Q
his divination

he swallows
bread
Itzamnah
flowers



The verb root is *mak'*, which is given as "to eat soft food, to swallow fruits" (comer frutas blandas, miel, huevos y otras cosas blandas, y comer tierra). The same root is found in Chol (*māk'* comer alimento blando//eat soft things). Richard Johnson proposed this reading in 1982.



mol
Kimil
??
lobah

u mol
Itzamnah
nikil
tz'ak ahaw.

u mol
God Q
u muk
lobal

u mol
Nal
k'a ha wah
ox wi'il

u mol
K'in Ahaw
k'ak' tun te
u muk

u mol
Chak
tz'am ahaw
yutzil

he collects
the Death God
??
badness

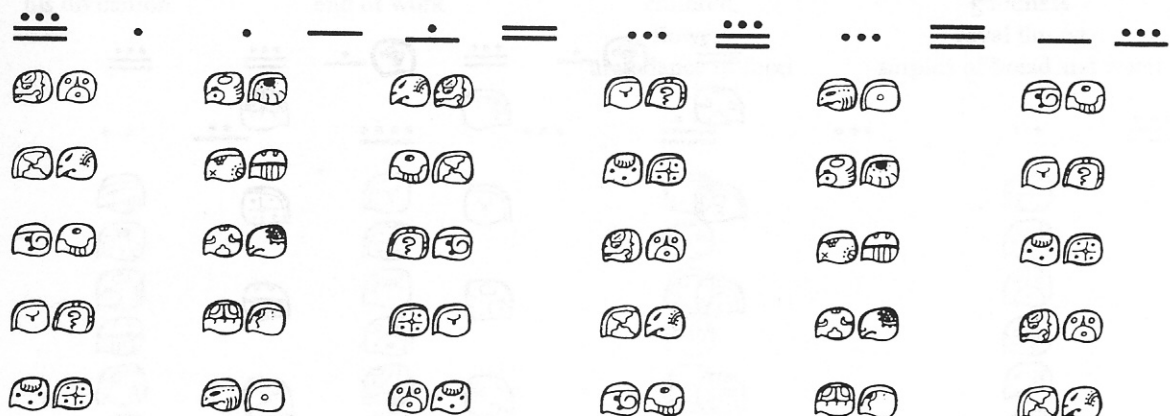
he collects
Itzamnah
flowers
royal succession

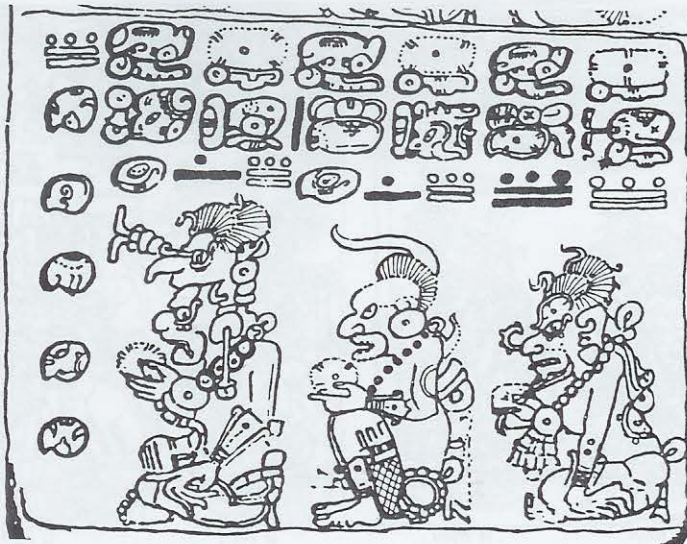
he collects
God Q
his divination
is badness

he collects
the Maize God.
surplus of bread
and water
much food.

he collects
the Sungod,
fire . . .
is his divination.

he collects
Chak
the royal throne
goodness





k'aw
nikte
God H
nikil

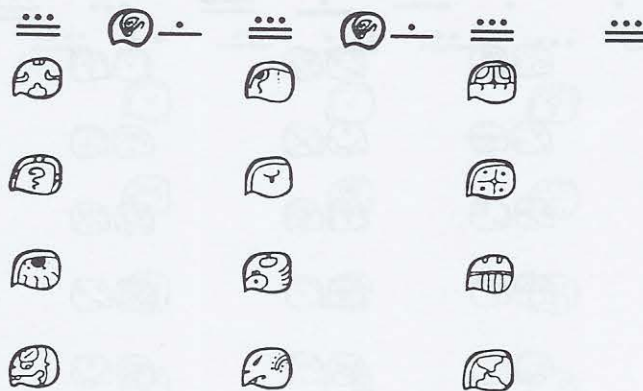
k'aw
nikte
Ho Pawahtun
Nal

k'aw
nikte
K'in Ahaw
k'ak tun te

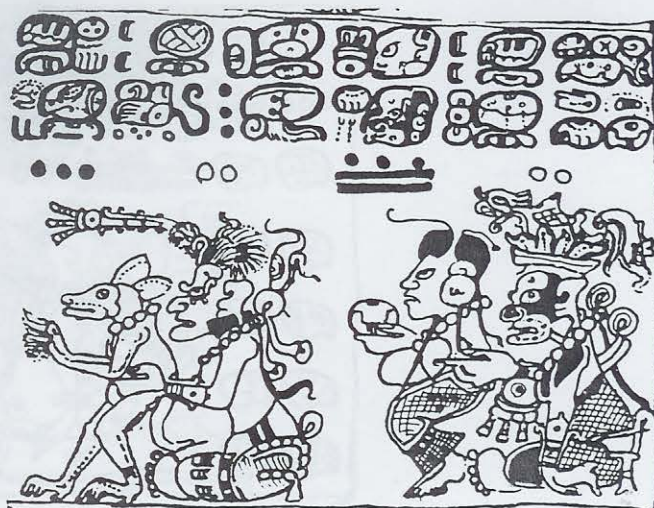
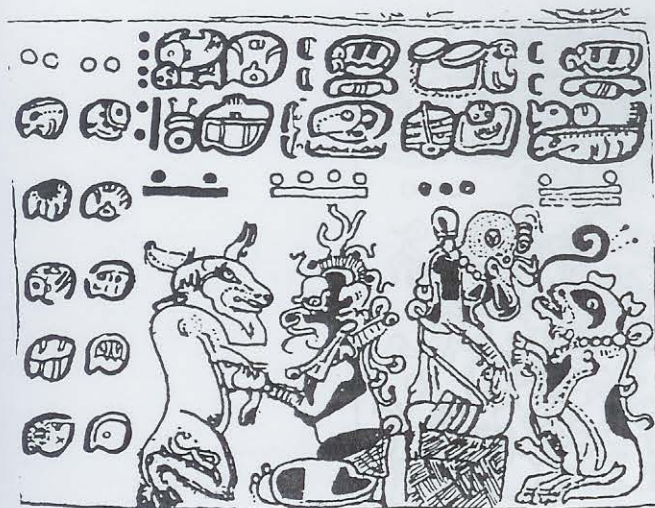
he harvests
flowers
God H
flowers

he harvests
flowers
"Five Pawahtun"
elotes.

he harvests
flowers
the Sun God
fire ...



This verb has always been interpreted as *k'am*, "to take, receive". The absence of the *ma* sign makes it more likely that the root of the verb was simply *k'a*, not *k'am*. In Yukatek, we found no verbal root *k'a* which would have fit in this context. In Chol, *k'a* and *k'aj* translate as "harvest" and "ask, ask for". *Nikte'* is a special flower used by modern Hmèen in their ritual, especially for adorning the altar ("flor de mayo", plumeria rubra). However, it also has a different meaning as "carnal sin" (vicio de carne y travesura de mujeres). An alternative translation might also be "he asks for sex", a translation which makes sense because the next chapter deals with relations between male gods, women and animals.



kan chihnal winik
yatan
Wuk Sip
u muk

K'uch
yatan
Tzul,
xul men

tamil/tal-ma?
yatan
Itzamnah,
yal ne
nikil
ox wi'il

Sak Ixik
yatan
God L
yutzil
tz'am ahaw
k'a ha wah

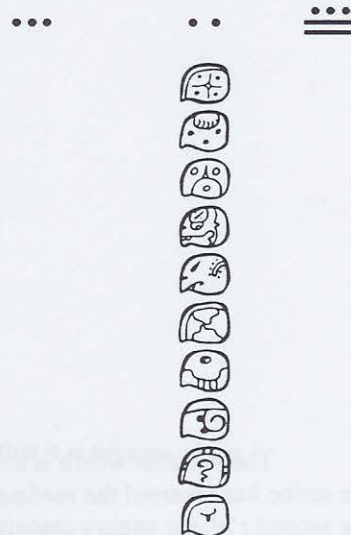
Four deer person
is the spouse of
Wuk Sip
his divination

Vulture
is the spouse of
the dog
end of work

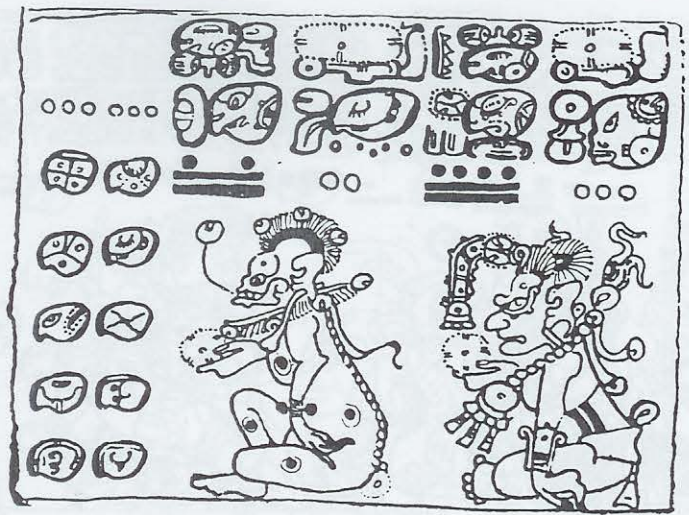
the sinner?*

is the spouse of
Itzamnah
children,
flowers
abundance of food

the Moon Goddess
is the spouse of
God L
goodness
royal throne
surplus of bread and water



* The nominal glyph of this strange being has never been deciphered. The three syllables which constitute the name can be read, but there is no word in Yukatek for an animal which involves this combination. However, *talax* is given as "to have carnal sin between woman and man" (pecar carnalmente mujer con hombre, u hombre con mujer, es vocablo honesto).



k'amwa
nikte
Kimil
??

u k'am
nikte
Itzamnah,
God H

he receives
the flowers/sin
the Death God
??

he receives
the flowers/sin
Itzamnah
God H

...

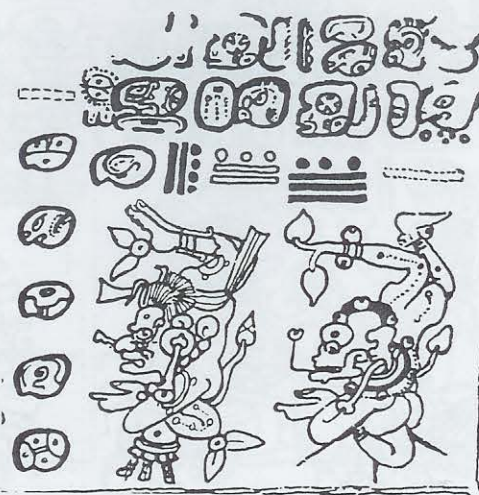
==

..

===



The *ni* suffix which is attached to the *nikte* glyph certainly serves as a phonetic complement. In the second *t'ol*, the scribe has reversed the reading order of the signs, so that the glyph seems to be *mak'*, which makes no sense here. In the second *t'ol*, the augury associated with Itzamnah is the nominal glyph of God H, suggesting that there is some overlap between them.



pak'ah
tzen
Itzamnah
k'utz

u pak'
k'utzil
tzen
Kimil

he plants
sustenance
Itzamnah
tobacco

he plants
tobacco
sustenance
Kimil



In Yucatek, *pak'ik* is the transitive stem for "to plant something." Here it seems that it is tobacco (*k'utz*, *Nicotiana tabacum*, *Nicotiana rustica*) which constitutes the sustenance or food for the gods.



u pak'ah
tzen
Chak
ahawle

he plants
his sustenance
Chak
reign.

u pak'ah
tzen
u muk
??

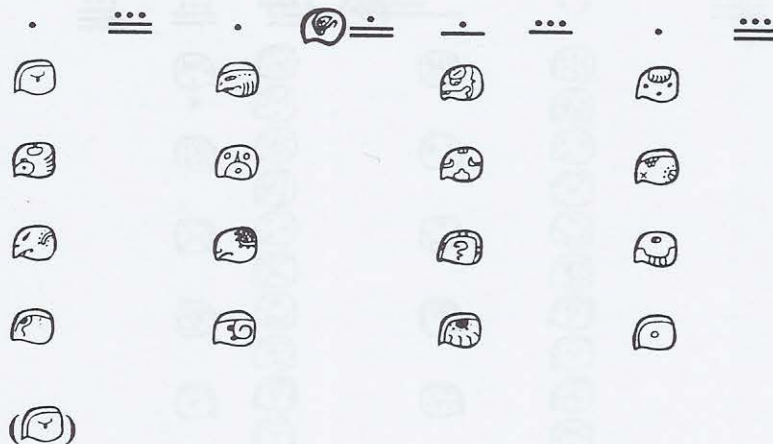
he plants
his sustenance
the divination is
??

u pak'ah
tzen
Sak God H
inah

he plants
his sustenance
White God H
seeds

u pak'ah
tzen
God M
yutzil

he plants
his sustenance
God M
goodness

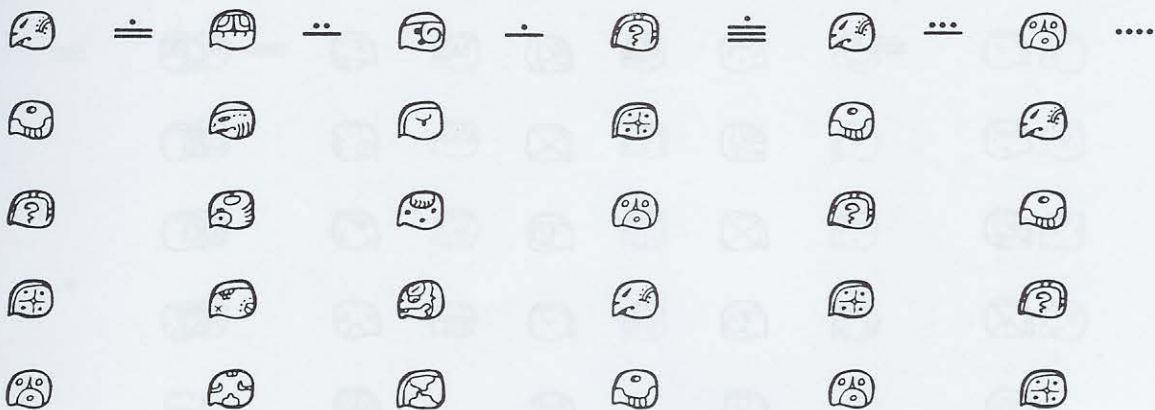


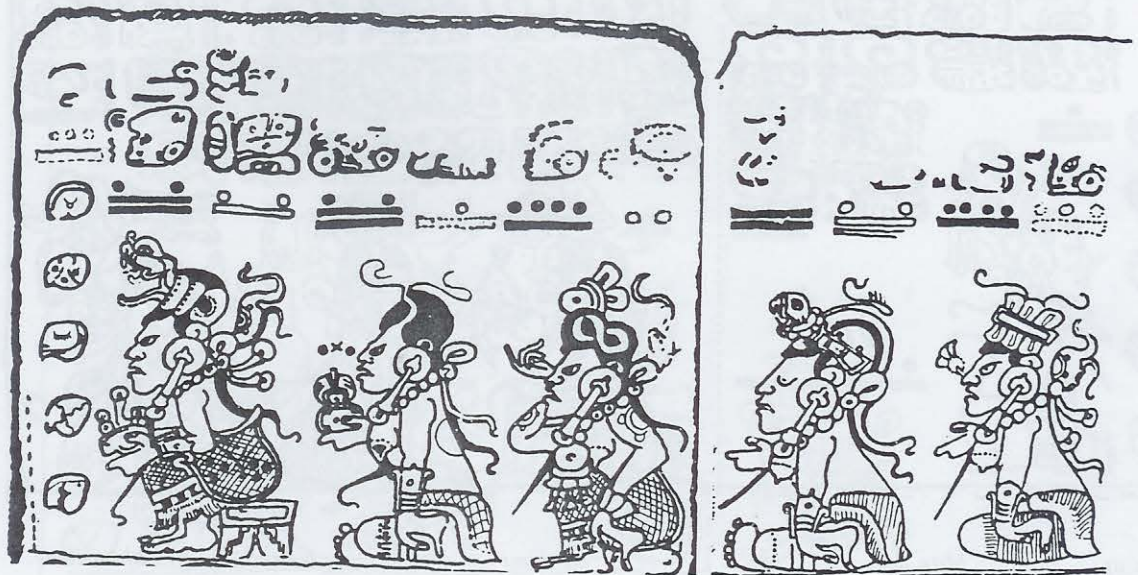
In Yukatek, *pak'ik* is a transitive stem for "to plant something." *Tzen* translates as "food, sustenance."



yaxun	Max	tzul	?? kimi	Itzamna	Oxlahun-Kan
u mut	mut	u mut	u mut	u mut	u mut
Uh Ixik	Uh Ixik	Uh Ixik,	Sak Ixik ??	Sak Ixik	Uh Ixik
Ahaw Le	Men Ahaw	Ox Wil	?? hul	?? nikil	u muk

Cotinga is the divination of the Moon Goddess Reign	Monkey is the divination of the Moon Goddess Royal works	Dog is the divination of the Moon Goddess much food	Death is the divination of the White Goddess bad winds	Itzamna is the divination of the White Goddess Flowers	13-Sky is the divination of the Moon Goddess their burial or bad divination
---	--	---	--	--	--



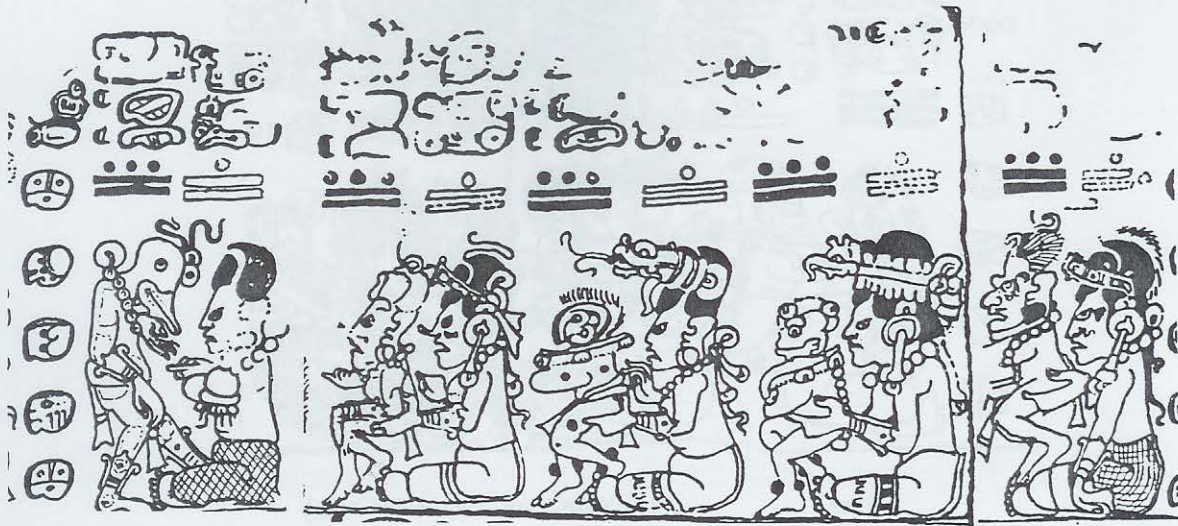


inah och ??
 Uh Ixik ??
 nikil

seeds, food
 Moon
 Goddess
 Flowers



buluk
"eleven"

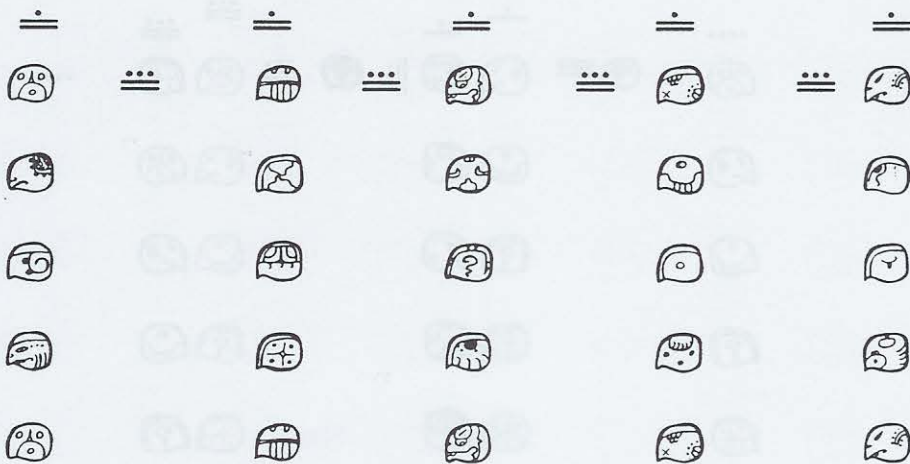


??? Uh Ixik
yatan Tahol

??? ??
yatan Uh
Ixik

??? Moon
Lady the
wife of the
Vulture

??? ?? the
wife of
Moon Lady



Most epigraphers have accepted the collocation used in these passages as *yatan*, but the final sign has a value of *li* in most other contexts. Robert Wald suggested that the verb intended in these collocations is *yatal*, "he is paid," or "he is recompensed." This alternative interpretation may make sense in this contexts.

Dresden 17c-18c



*u kimi
u kuch
Uh Ixik
uhul*

*Ka-Yax-K'an
u kuch
Itzamna Uh
Ixik*

*Muy
u kuch
u muk
Uh Ixik*

Death is the
burden, of the
Moon
Goddess, bad
winds

2-Blue-
Yellow is the
burden of
Itzamna, the
Moon
Goddess

Muy is her
burden, the
divination of
the Moon
Goddess





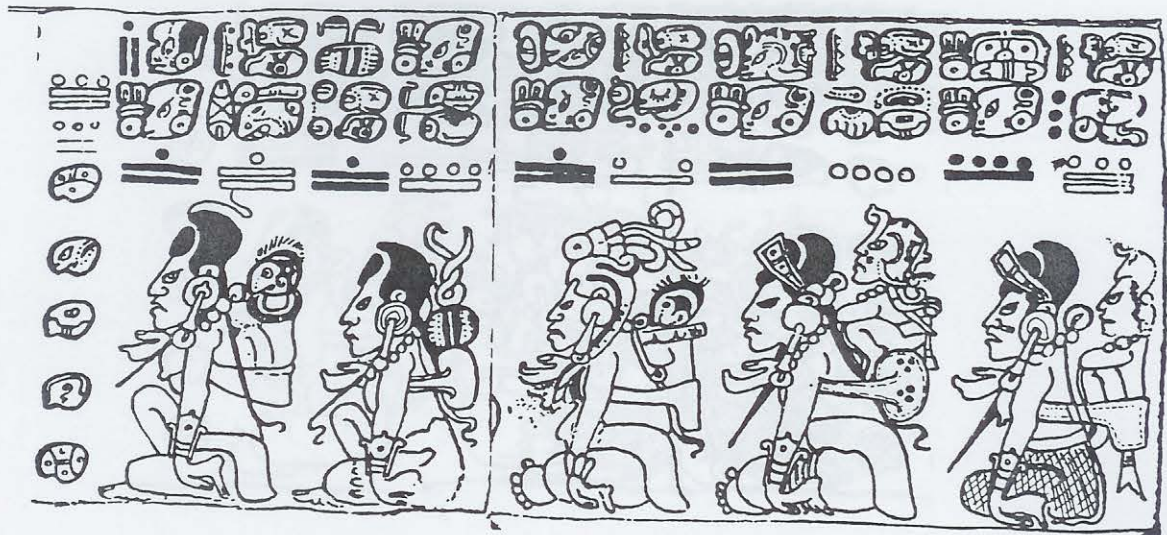
Sak-Chak-Kimi
u kuch
Uh Ixik
?? hul

Ka-Yax-K'an
u kuch Nal
k'a ha wah

White-Red-
 Death is the
 burden of the
 Moon Goddess
 bad wind

Two-Blue-
 Yellow is the
 burden of the
 Maize God
 surplus of food





God Q
u kuch
Sak Ixik
tok'-te-ba

k'ak'
Sak Ixik
u kuch,
K'ak'-tek

Kimi
u kuch
Sak Ixik
?? hul

Nal
u kuch Sak
Ixik
k'a ha wah

Sak-Nik
u kuch
Sak Ixik
ox wil

God Q is the
burden of the
White Lady
strife

Fire
White Lady
is the burden
Fire-wood or
rapidly

The Death
God is the
burden of the
White Lady
bad wind

The Miazé
God is the
burden of the
White Lady
surplus of
food

White-Flower
is the burden
of the White
Lady
much food





yatan
Uh Ixik
Sak Ixik
Ox Wil

yatan
Uh Ixik
Sak Ixik,
Kimil

the wife of
Moon Lady,
White Lady,
much food

the wife of
Moon Lady,
White Lady,
Death

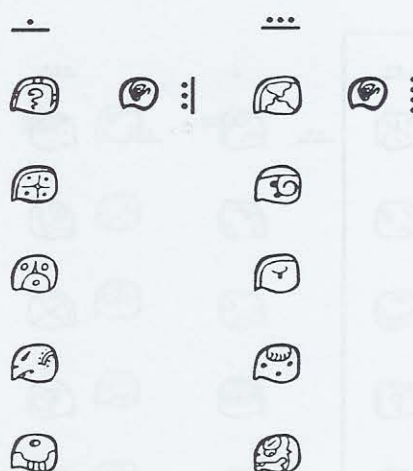


yatan
Uh Ixik
Wuk ??*
Xul men

yatan
Uh Ixik
Sak Ixik
?? nikil

the wife of
Moon Lady,
???
end of work

the wife of
Moon Lady,
White Lady,
flowers



Most epigraphers have accepted the collocation used in these passages as *yatan*, but the final sign has a value of *li* in most other contexts. Robert Wald suggested that the verb intended in these collocations is *yatal*, "he is paid," or "he is recompensed." This alternative interpretation may make sense in some contexts.

**Nikolai pointed out that this name appears with a peccary (Madrid 93a), an armadillo (Madrid 91a), and a deer (Madrid 41b).



hu ??
yatal
God L
Tzam Ahaw

Hu ??
yatal
Tzul
u muk

???
yatal
ibach
Ox Wil

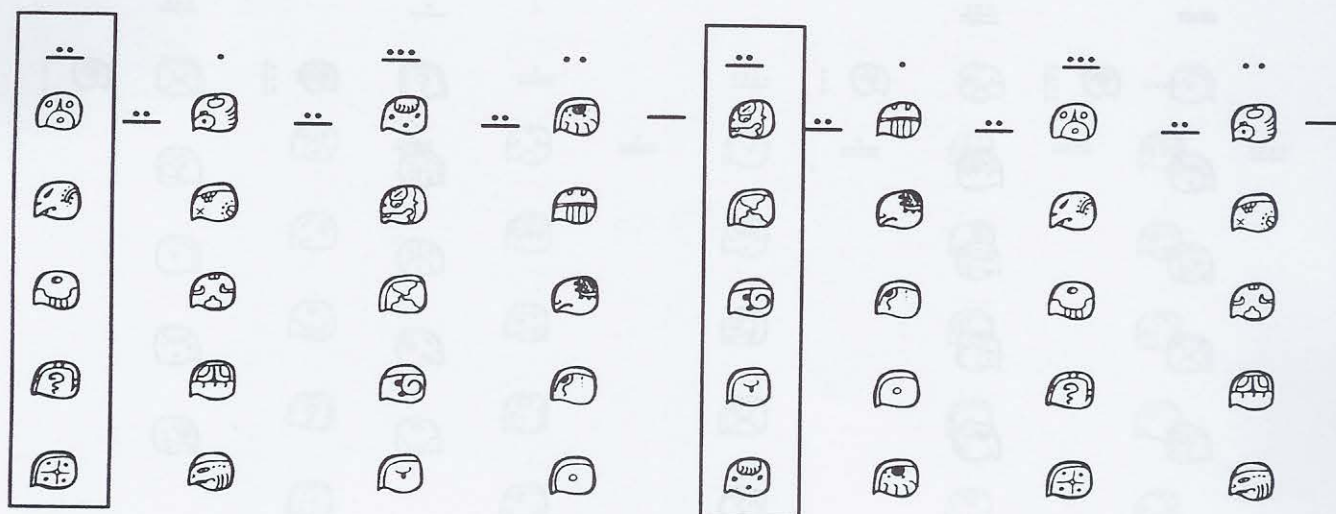
Hu ??
yatal
Kan-Chinal-
Winik
?? hul

??? is
the payment?
of God L
royal thrones

Hu?? is the
wife
of the dog
his
divination
or burial

??? is the
wife of
the
armadillo
much
food

???
is the wife of
the Deer God
bad wind



This almanac begins on 7 Ahaw and counts through 26 days twice to accumulate 52 days. The diviner went through the written sections ten times to accumulate 260 days. We have laid out the dates in full to show the pattern. The marked columns contain the day written in the beginning of the almanac. The day signs in the codex alternates between these two columns.



yatan
Ho Pawahtun
Uh Ixik
Tzam Ahaw

yatan
Yax-Balam
Uh Ixik
lobah

yatan
Kan
Pawahtun
Ox wil, ??
nikil

yatan
God Q
Uh Ixik,
?? hul

the wife of
Pawahtun is
Moon
Goddess
Royal Throne

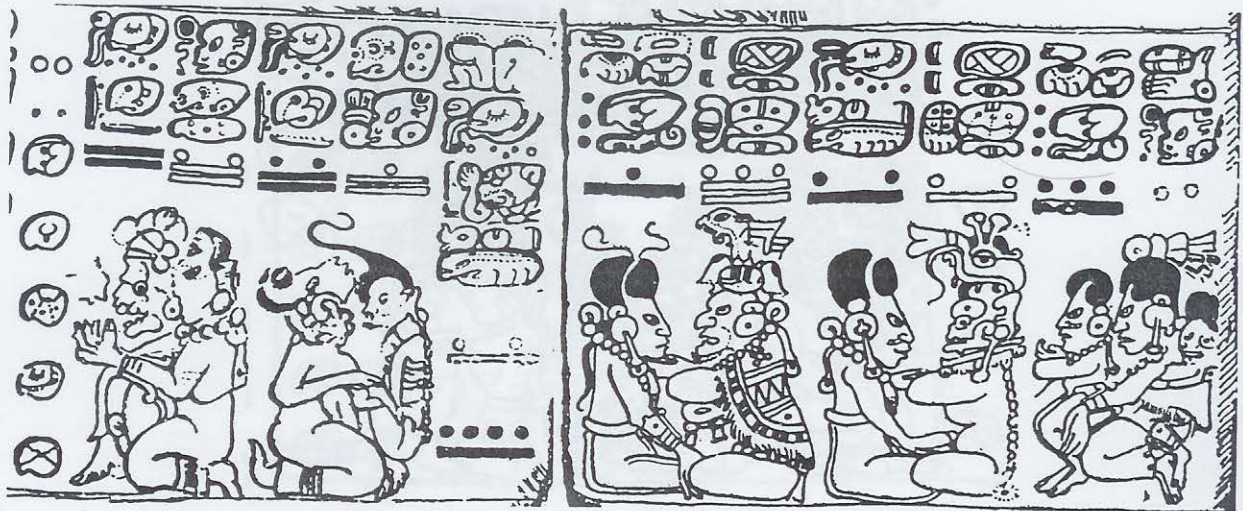
the wife of
Yax-Balam
is the Moon
Goddess
ruin

the wife of
Pawahtun
much food,
?? flowers

the wife
of God Q
is Moon
Goddess
bad wind



Thompson and other have suggested that these scenes pairing the Moon Goddess with various gods represent the movement of the moon through various constellations. However, this interpretation requires that the gods represent zodiacal constellation and there is no supporting evident for these identifications. We think these almanacs are more likely divinations for marriage ceremonies.



?? hul
Uh Ixik
u muk xib

?? hul
xib u muk
Uh Ixik,

?? ??
?? kimil
u lobah
xul men

k'a ha wah
yatal Ox
wil, ?? nikil

?? hul
yatal
xul men
matzil

k'a ha wah
yal Ox wil,
Uh Ixik

gasps?
the Moon
Goddess
her
divination
is fright

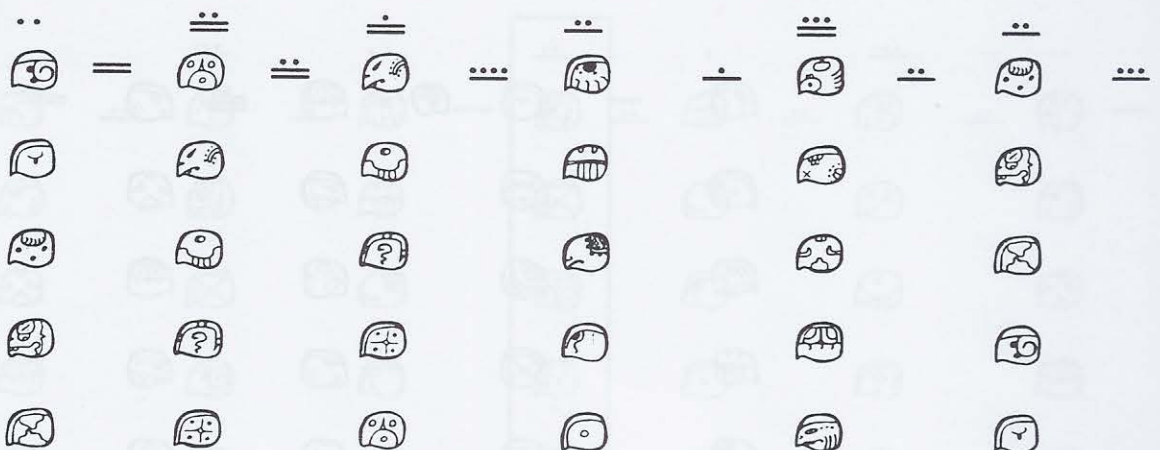
gasps,
fright is
her
divination
the Moon
Goddess

????
?? death,
damage
end of
work

surplus of
water and
food is her
wife
much food
?? flowers

bad wind
is the wife
end of work
nothingness

surplus of
food
is her child
much food
Moon
Goddess



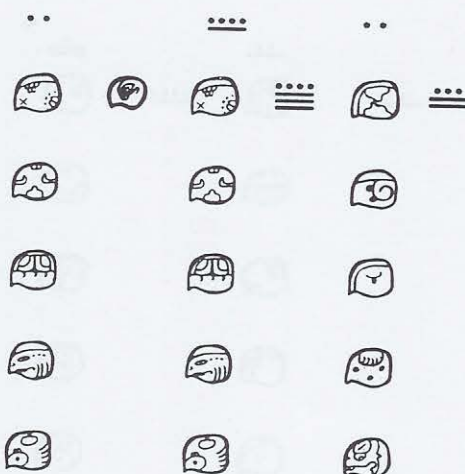
Xib also means "young man" in Yukatek, and *xibil* is "penis," "trundle with fear," and "take fright." We have taken *xib* to be a divination here, but other scholars have suggested other interpretation

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<i>hah</i>	<i>em</i>	<i>em</i>
<i>u sak nikil</i>	<i>ch'ok</i>	<i>ch'ok</i>
<i>kelem</i>	<i>Itzamna,</i>	<i>?? Kimil</i>
<i>ch'ok</i>	<i>?? nikil</i>	<i>?? hul</i>
<i>ahaw</i>		

becomes	descended	descended
attached	the youth,	the youth,
the white	Itzamna	the Death
flower of	?? flowers	God,
the youth,		bad wind
the young		
lord.		



This almanac seems to concern the descent of children or perhaps their naming. The first text has a verb that appears at first glance to be an eclipse glyph. However, that interpretation does not make much sense in this context. On a chance, we took the sign to be a reduplicated *ha* sign and the verb to be *hah*. This gave an interesting result. *Hah* as a verb means "to make something permanent" and "to fix in place." In this text, the glyph following the verb is *u sak nikil*, the term for "soul" that the Maya used in "death" expressions and in some parentage statements. Perhaps this text records the time when the child's soul becomes safely and permanently attached. Today, the Tzotzils and other Maya groups believe that a baby's soul is delicately attached for sometime after its birth. This almanac may have been used to time rituals celebrating this transition.

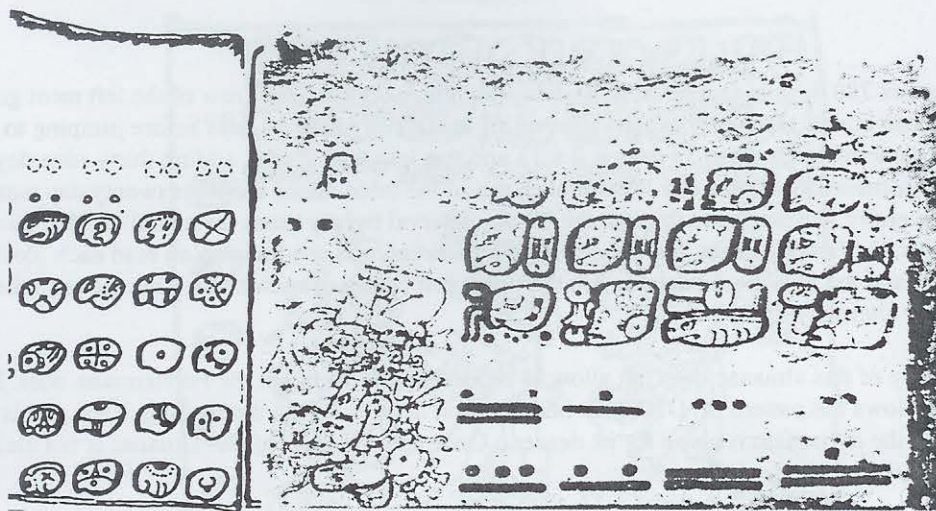


<i>hah</i>	<i>em</i>	<i>em</i>
<i>u sak nikil</i>	<i>ch'ok</i>	<i>ch'ok</i>
<i>kelem</i>	<i>Itzamna,</i>	<i>?? Kimil</i>
<i>ch'ok</i>	<i>?? nikil</i>	<i>?? hul</i>
<i>ahaw</i>		

becomes	descended	descended
attached	the youth,	the youth,
the white	Itzamna	the Death
flower of	?? flowers	God,
the youth,		bad wind
the young		
lord.		

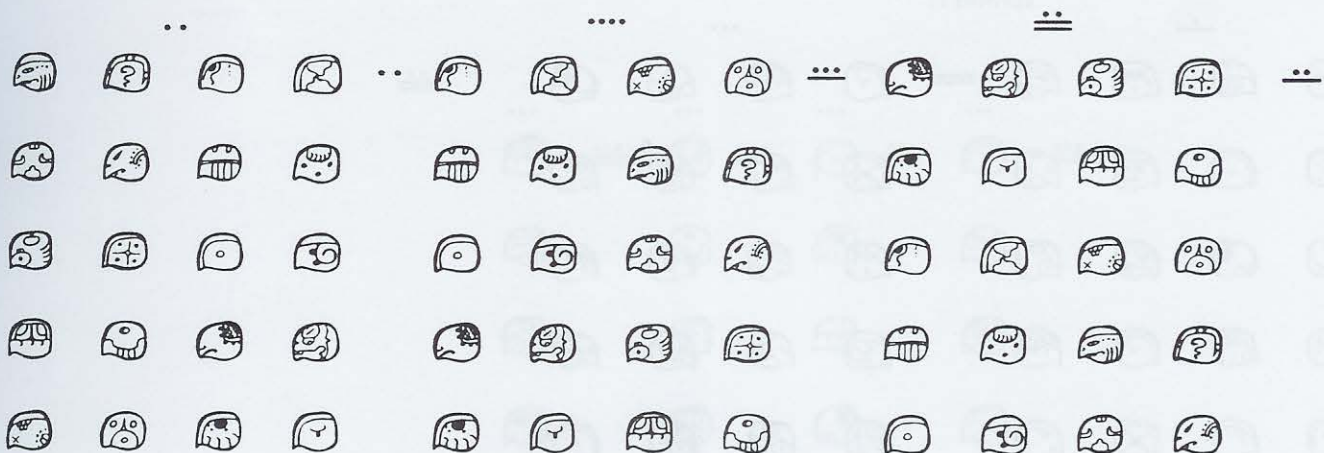


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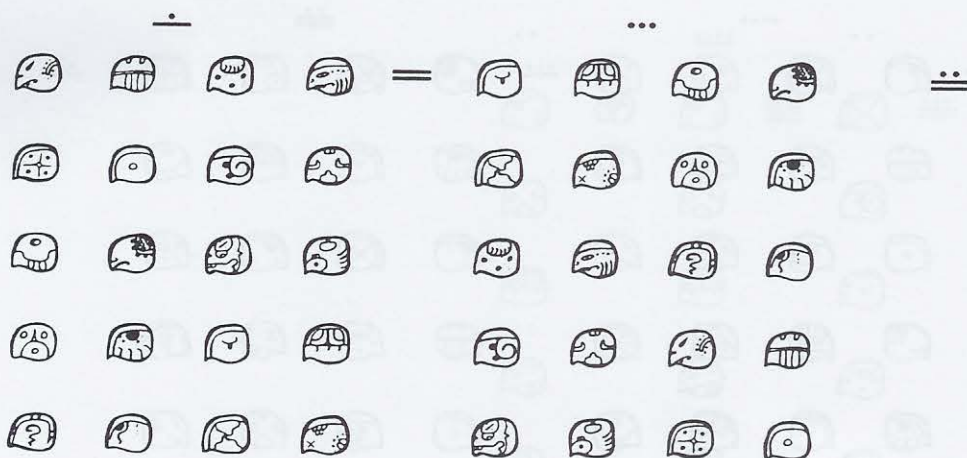
[em ???	[em] Kimi	[em] k'u	em God Q	em Chak
ch'ok	ch'ok	ch'ok	ch'ok	ch'ok
????	?? hul	God H	xul men	k'u

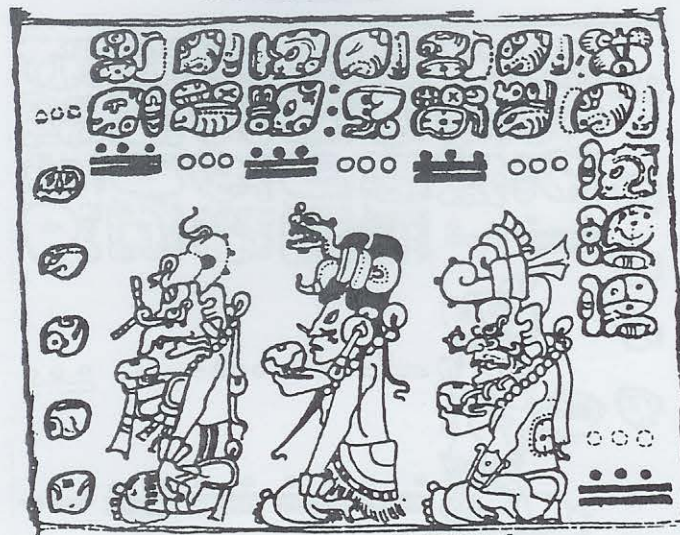
[descended ???	descended Death	descended god	descended God Q	descended Chak
child	God	child	child	child
???	child	God H	end of	god
	bad wind		work	



This almanac covers 780 days in segments of 39 days. It begins with the upper row of the left most group of days with 2 Etz'nab. One then counts through the intervals arriving at the end of the 39 days before jumping to the next day sign to the left in the same row. Because 39 days is 3 x 13 and one less than 2 x 20, adding thirty-nine days gives the same day number combined with one day less for each run of the table. Since there are twenty day names in the beginning section, the entire almanac goes through the 39-day interval twenty times for a total of 780. Twenty-one times through gives 819 days, the famous count that divided time into directional quadrants. You read each block of dates in rows from left to right and top to bottom beginning in the upper left corner of each block. One move to the left covers an interval of 39 days and alternatively 819 days.

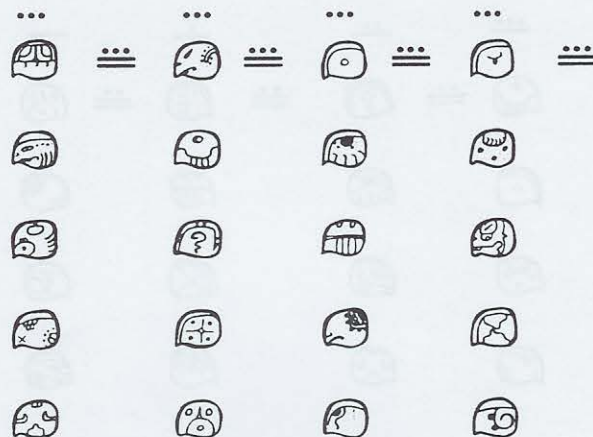
The Villacorta copy of this almanac does not allow us to identify the verb, but the Forstermann does. It is *em*, "descend." The rest follows the pattern of D20b, but here the first deity is shown descending. Each god is named, called a *ch'ok* ("youth"), and the divination is given for its descent. Once again the use of this almanac is not clear, but it may well have involved rituals for children.



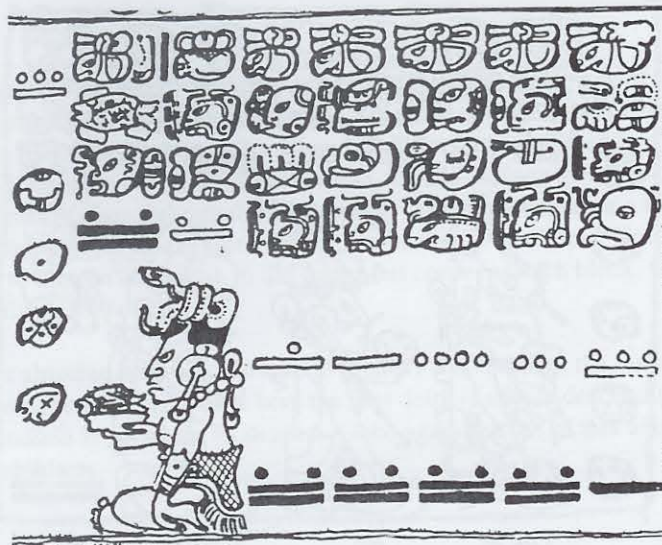


Lak'in	Na	Chik'in	Nohol
hih	hih	hih	hih
Chak	Sak Ixik	K'in Ahaw	Nal
Ahawle	ox wil	xul men	yutzil
			?? nikil

East he	North she	West, he	South, he
harvested	harvested	harvested	harvested
maize	maize	maize	maize
Chak	the White	Sun Lord	the Maize
Reign	Lady	end of work	God
	much food		goodness,
			?? flowers

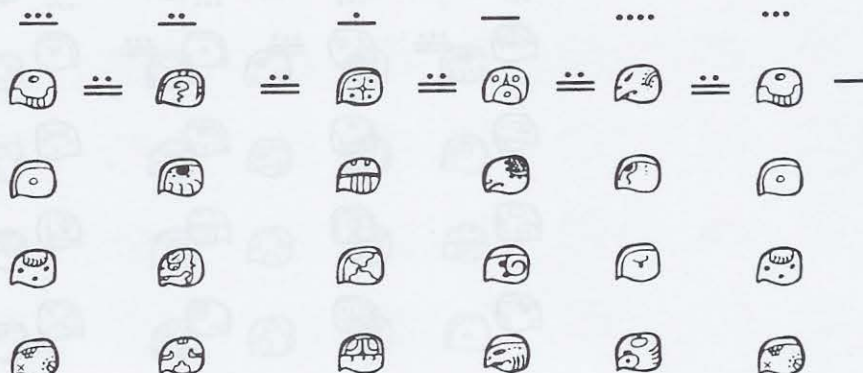


The verb in this almanac is a problem. The animal head appears to be the same *ch'o* head that appears in the "drill" glyph on page 5b. However, *ch'oh* does not appear in any of the Yucatek dictionaries as a verb. We looked up the other possible phonetic value for heads like this--*hi*--and found that *hi'* means to "pull out or harvest (*estregar*) maize." Since the gods are holding maize, we thought this interpretation a good possibility.



<i>hok'ah</i>	<i>hok'ah</i>	<i>hok'ah</i>	<i>hok'ah</i>	<i>hok'ah</i>	<i>hok'ah</i>
Ho-Pawahtun	Yax-Balam	K'awil	?? Kimi	Nal	k'a ha
kay	tok'	ulum	?? hul	yok chih	wah
u sih	u sih	u sih	xul men	u sih	u sih
Uh Ixik					k'uch
?? nikil					

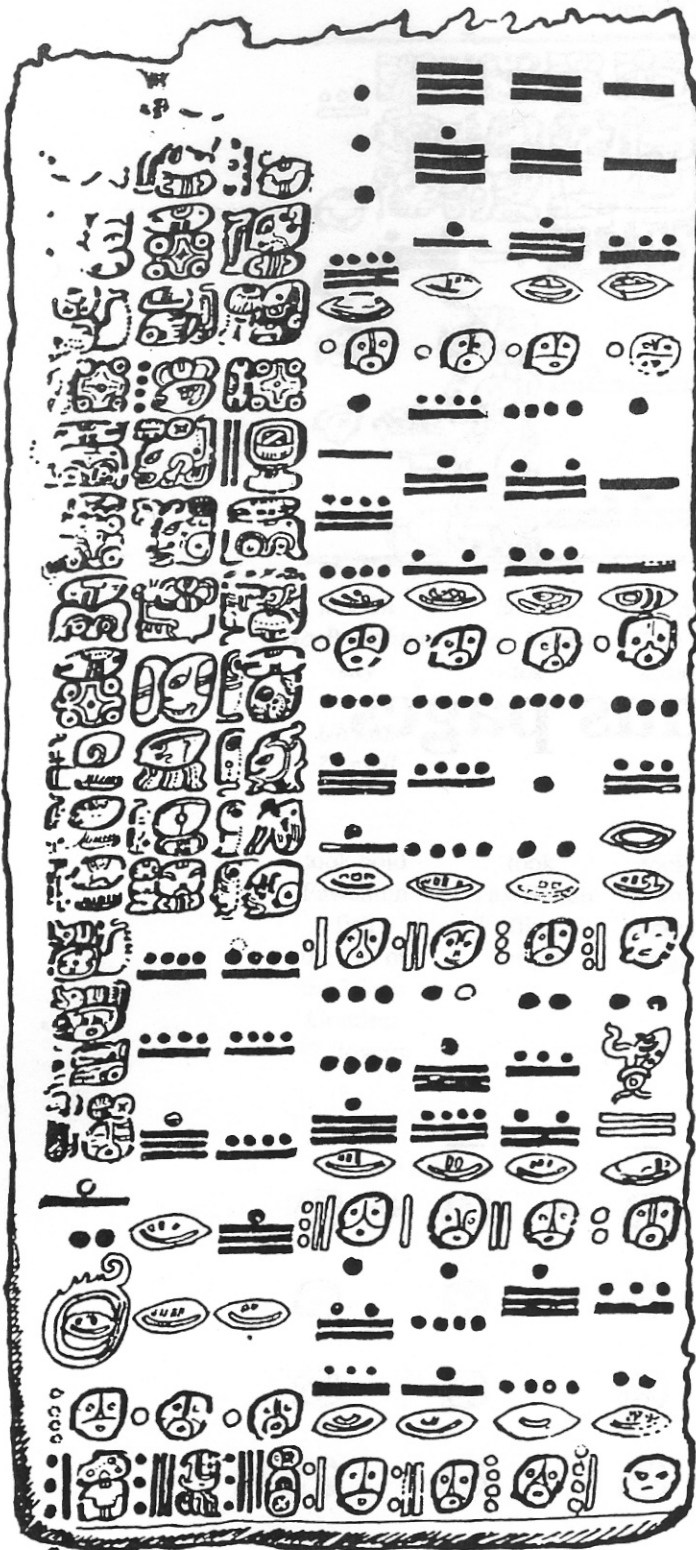
took hold	took	took	took	took	took
Pawahtun	Yax-Balam	K'awil	Death	Maize	surplus
fish	flint	turkey	God	God	of food
the gift of	her gift	her gift	bad wind	deer	her gift
the Moon			end of	haunch	Vulture
Goddess			work	her gift	
?? flowers					



This verb was first deciphered by Wolfgang Cordan in his 1963 treatise. He used this passage and a trapping scene in the Madrid to generate the reading *hok'* for the "toothache" glyph. In the Madrid, the verb goes with a scene of trapping, while in this one the Moon Goddess holds a fish in an offering bowl. Cordan pointed out that *hok' chi* is *prometer, promesa*, "promise, pious offering." However, these texts do not have the *chi'* with the verb. Moreover, *hok'* also means "to trap, to seize, and to take." We believe take is a better interpretation for this context.

The reading of the *si*, "gift," glyph was first made by Kelley and Berlin in their 819-day count paper. David Stuart added phonetic evidence to support their reading.

The Venus pages

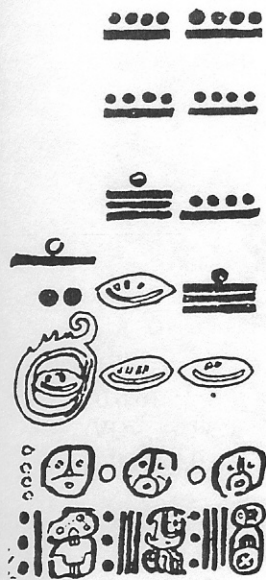


Ring number and
the historical base
dates of the table

accumulations of the full runs of the table: $8.2.0 = 5 \times 584 = 8 \times 365$

$13 \times 8.2.0 = 37,960 = 2 \times (2.12.13.0) = 104 \text{ hab} = 2 \text{ calendar rounds}$

52	39	26	13
correction to 1 Ahaw 18 Wob 10 CR -8	correction to 1 Ahaw 13 Mak 4 CR -12	correction to 1 Ahaw 18 Wob 2 CR -8	accumulated corrected since the -6.2.0 base
12	11	10	9
8	7	6	5
4	3	2	1 ☉



This section of page 24 establishes the bases of the table both in the third creation and in the historical time of the scribes. Although the mechanics of these numbers have long been known, Floyd Lounsbury's work on the contrived nature of these numbers revealed the strategy of the designers of the table. Christopher Power (in his 1996 thesis) has extended Floyd's work to include many more cycles and the basis numerical symmetry of the Maya conception of the world.

The ring number to the left surrounds the *k'in* position in a distance number to be counted to a day before the Creation date of 4 Ahaw 8 Kumk'u. Subtracting this ring number from the era date gives the date 12.19.13.16.0 1 Ahaw 18 K'ayab, the base date of Venus in the last Creation. The center number is a dn of 9.9.16.0.0 that is added to the ring date to given the historical base, 9.9.9.16.0 1 Ahaw 18 K'ayab, which is written in the right column and center calendar round date. In fact this center calendar round goes with both the ancient and historical base dates.

Floyd Lounsbury realized that the dn in this sequence, 9.9.16.0.0, was a contrived number designed to related the two base dates in very special ways using common multiples of many different calendric cycles. He demonstrated that this number (1,366,560 in our system) has the following properties:

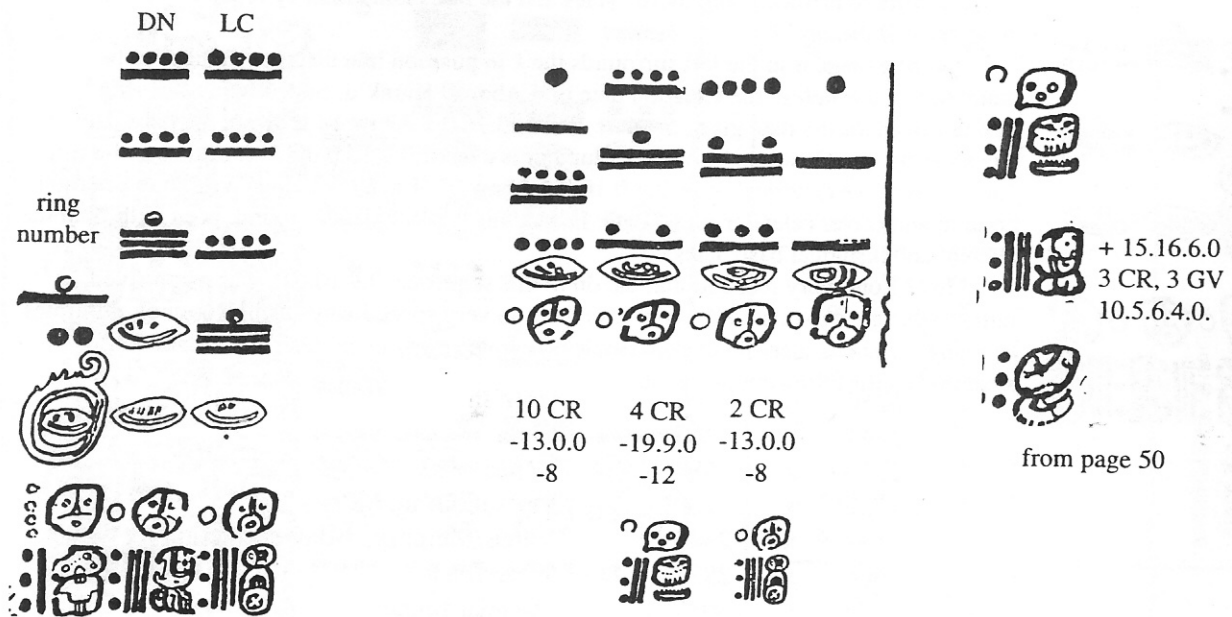
5256	x	260	tzolk'in
3744	x	365	haab
2340	x	584	Venus
1752	x	780	triple tzolk'in, Mars
584	x	2340	Venus/Mercury, 4-day correction to Venus
468	x	2920	Venus/haab
72	x	18980	calendar round
36	x	37960	grand Venus
2628	x	520	double tzolk'in

Chis Powell added another equally important cycle to this set: 341,640 or 2.7.9.0.0. This number breaks down as follows:

1314	x	260	tzolk'in
3744	x	365	haab
949	x	360	tun
585	x	584	Venus
584	x	585	Venus + 1, correction factor
438	x	780	triple tzolk'in, Mars
146	x	2340	Venus/Mercury, 4-day correction to Venus
117	x	2920	Venus/haab
18	x	18980	calendar round
9	x	37960	grand Venus
2628	x	520	double tzolk'in

There are four of these cycles in the 9.9.16.0.0 distance number so that if it is added to the era date, the dn will yield the first repetition of 4 Ahaw 8 Kumk'u in this creation to fall on a period-ending date in this creation.

These factors also have to do with the way the Maya corrected this table. Besides the 1 Ahaw 18 Kayab discussed above, the table includes the corrections 1 Ahaw 18 Wo, 1 Ahaw 13 Mak, and 1 Ahaw 3 Xul. These corrected base dates were achieved by subtracting 6.9.0 (2340) or one of its multiples from the thirteenth run of the table. In other words, the table was corrected after twelve runs to accomodate the error of 0.08 day from the 584-day cycle that accumulated every Venus year (583.92 days). This error accumulated to 5.2 days over the full thirteen runs of the table (65 Venus years or 104 haabs). In correcting the table, the scribes needed to find another 1 Ahaw date that fell at an even number of Venus years earlier, while subtracting the required number of days. To accomplish this, they used 2,340, a number that commensurated Venus and Mercury. Written as 6.9.0 in Maya number, 2,340 equals 20 x 117 (Mercury + 1), 9 x 260 (so that it lands on a 1 Ahaw when subtracted from the original base date), and 4 x 585 (Venus + 1). This last number means that subtracting 2,340 or 6.9.0 from a base date lands on 1 Ahaw, while correcting the table by four days. this correction leaves an error of 1.2 days. The Dresden scribes used 6.9.0 to generate the four historical base dates recorded in the table. Lounsbury (1978) proposed the following chronology for the entire table.










In Lounsbury's solution, the most likely operational base date was 10.5.6.4.0 1 Ahaw 18 Kayab (November 20, 934), based on a 0 day correction for this run of the table. All other 1 Ahaw 18 Kayab's have errors that increase in size as they move further from this center date. Floyd told me in November that he has checked all eligible dates against the arcus visionis and confirmed the accuracy of his previous study of this problem. He proposed that the table ran once from this date, giving 4 full runs after the 9.9.9.16.0 date. After that fourth run, the first correction of 4.12.8.0 was applied to correct for 8 days and resetting the date at 1 Ahaw 8 Wo. The next run of the table was corrected by four days, giving a new base of 1 Ahaw 13 Mak. In the correction numbers above, 9.11.7.0, records the distance number between 1 Ahaw 18 Kayab and the resulting 1 Ahaw 13 Mak, but the effect is to correct four days from the 18 Wo date. The next run was corrected in the same way, two calendar rounds (1 full run) minus 6.9.0 or 2,340.

Lounsbury also explained the 1.5.5.0 with this correction process. He pointed out that the correction numbers above imply that the Maya applied three foreshortened corrections of 6.9.0 for every two runs of the table (or four calendar rounds). He calculated that 80

calendar rounds had elapsed between the original 1 Ahaw 18 Kumk'u that occurred before the Creation and the last 1 Ahaw 18 K'yab to be used; that is, the one that fell on 10.10.11.12.0. Eighty CRs equals forty runs of the table, and since the table corrects three times for each two runs, we have a total of twenty correction cycles to give $20 \times 3 \times 6.9.0$ or $60 \times 6.9.0$. One more correction would have been added to the total to give 61 corrections of 6.9.0 since the mythic base date. Four runs of the table minus these 61 corrections gives the number 1.5.5.0. I shall not try to explain how this number was used, since we have included Floyd's paper has been published.

Lounsbury's solution

[13. 0. 0. 0. 0],	4 Ahau 8 Cumhu [day no., old era]
-6. 2. 0	(ring number)
[12.19.13.16. 0],	1 Ahau 18 Kayab [day no., old era]
+9. 9.16. 0. 0	(72 CR) [add; subtract 13 baktuns]
9. 9. 9.16. 0,	1 Ahau 18 Kayab [day no., current era]
+1. 1. 1.14. 0	(8 CR)
10.10.11.12. 0,	1 Ahau 18 Kayab
+4.12. 8. 0	(2 CR - 13.0.0)
10.15. 4. 2. 0,	1 Ahau 18 Uo
+4.18.17. 0	(2 CR - 6.9.0)
11. 0. 3. 1. 0,	1 Ahau 13 Mac
+4.18.17. 0	(2 CR - 6.9.0)
11. 5. 2. 0. 0,	1 Ahau 3 Xul.

D48				[4 Ahaw] 8 [Kumk'u]
				[verb] yok, ??? its foundation or beginning
				???li Chak Ek', ?arrived? the Great Star
D49				lak'in k'alah, in the east, was tied
				Chak Ek' K'an Pawahtun, Great Star 4-Pawahtun
D50				Chak Ek' Na Ahaw Uh, Great Star, Holy Moon Lady
				Chak Ek' Hun Ahaw, Great Star, One-Ahaw
				Chak Ek' Ain, Great Star, Crocodile
D46				Chak Ek' Kimi, Great Star, the Death God
				u muk kab, bad divination for the earth
				u muk u kun, bad divination for their seats
				u muk winik, bad divination for the people
				xul k'in, end of days
				xul habs, end of years
				Hun Kanal, One Sky
D47				Ah Tzuk Ahaw, Bearded Lord



The first two columns record the arrival and setting up of the five Morningstar Gods who occupy the upper images in the following five pages of the almanac. The passage ends with a negative divination for the earth, the seats (of gods and kings), and for the people. The divination is the "end of days, end of years," perhaps as a reference to the events of the Fourth Creation. The god who oversaw the divination also occurs on Stela F of Copan where he appears with jaguar features and a shell beard. This god, One-Sky Bearded Lord, is the famous cruller-eyed god known as GIII of the Palenque Triad. He appears in contexts that clearly identify him as a Venus god, while in others he is a sungod.



4 Ahaw

8 Kumk'u

yok, "entered

God L

Chak Ek', Great Star

Lahun Chan, Ten-Sky

Chak Ek', Great Star

yah K'awil, wounding of K'awil



yah Chak Bolay, wounding of Chak-Bolay



yah Nal, wounding of the Maize God



yah ????, wounding of Frog God

yah ???, wounding of God ??



The second text on page 24 continues establishing the context for Venus at the beginning of the Fourth Creation. The verb, *yok*, can mean "to place a foot or base" and "to enter or become." Interestingly, the subjects are two of the five spearer gods. The three below are not mentioned because they are actually gods from central Mexico who were not present at Maya Creation. The last five glyphs combine the names of the speared gods with a verb that has a negative result in the Dresden Codex. *Yah* means "to wound" and "to damage." Although we have no direct phonetic evidence in support of this verb, it is one that is known in Classic-period inscriptions and it fits the context.


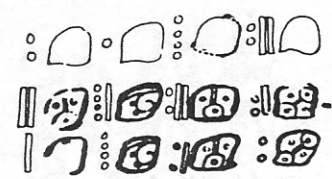








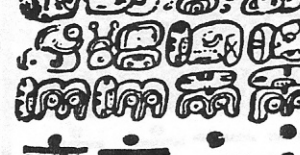
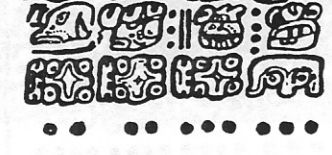

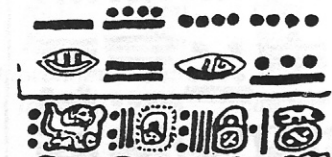



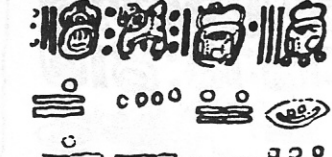
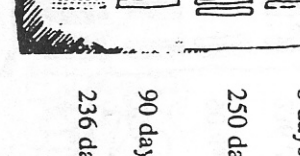
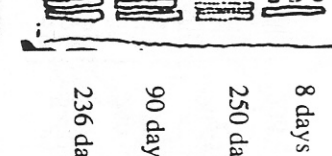
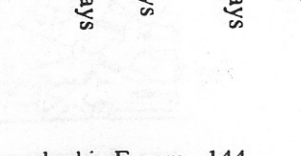
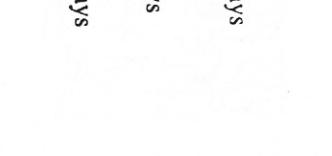
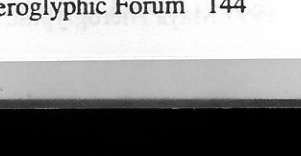






the events and gods who enter each station of the table

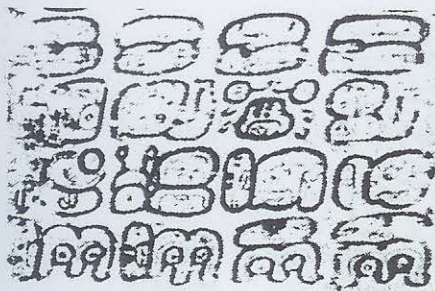
intervals accumulating throughout the five pages

the events and gods leaving each station

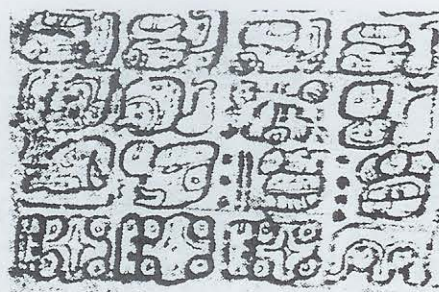
intervals between the column

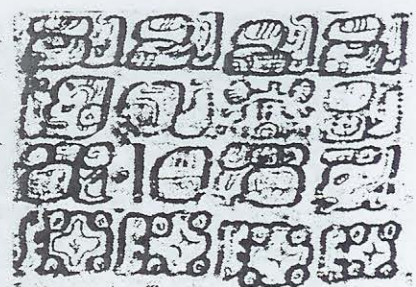
		
236 days	236 days	236 days
90 days	90 days	90 days
250 days	250 days	250 days
8 days	8 days	8 days
Base date c: 1 Ahaw 13 Mak	Base date c: 1 Ahaw 13 Mak	Base date c: 1 Ahaw 13 Mak
2,920 days	2,920 days	2,920 days
Base date a: 1 Ahaw 18 K'ayab	Base date a: 1 Ahaw 18 K'ayab	Base date a: 1 Ahaw 18 K'ayab
Base date d: 1 Ahaw 3 Xul	Base date d: 1 Ahaw 3 Xul	Base date d: 1 Ahaw 3 Xul



k'alah	k'alah	k'alah	k'alah
nah	chik'in	nohol	lak'in
ulum	sinan	Chak ??	Kimi
Chak	Chak	Chak	Chak
Ek'	Ek'	Ek'	Ek'

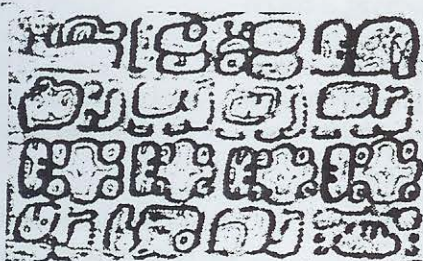


k'alah	k'alah	k'alah	k'alah
nah	chik'in	nohol	lak'in
bird	??	Oxlahun	Kan
Chak	Chak	Kan	Pawahtun
Ek'	Ek'	Chak	Chak
		Ek'	Ek'



k'alah	k'alah	k'alah	k'alah
nah	chik'in	nohol	lak'in
K'in	Wak	Ak'ab	Ixik Uh
Ahaw	Yich	Ahaw	Ahaw
Chak	Chak	Chak	Chak
Ek'	Ek'	Ek'	Ek'

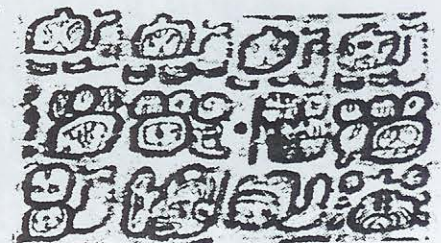
ties	ties	ties	ties	was tied	was tied	was tied	was tied	was tied	was tied	was tied	was tied
to the	to the	to the	to the	to the	to the	to the	to the	to the	to the	to the	to the
north	west	south	east	north	west	south	east	north	west	south	east
turkey	scorpion	Great ???	Death	Vulture?	God ?	13 Sky	4-	Sun	6-Yich	Night	Lday
Great	Great	Great	God	Great	Great	Great	Pawahtun	Lord	Great	Lord	Moon
Star	Star	Star	Great	Star	Star	Star	Great	Great	Star	Great	Lord
			Star				Star	Star		Star	Great
											Star



Ain	Ulm	Sinan	Chak ??
tzeni	tzeni	tzeni	tzeni
Chak	Chak	Chak	Chak
Ek'	Ek'	Ek'	Ek'
lak'in	nah	chik'in	nohol



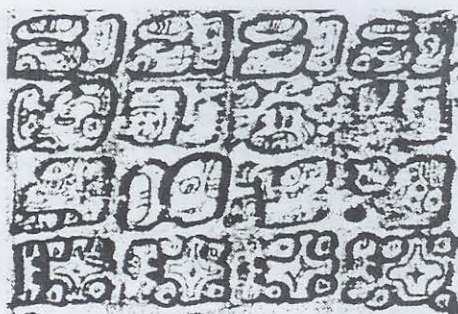
Kimi	?bird	???	Oxlahun
Chak	Chak	Chak	Kan
Ek'	Ek'	Ek'	Chak
lak'in	nah	chik'in	Ek'
			nohol



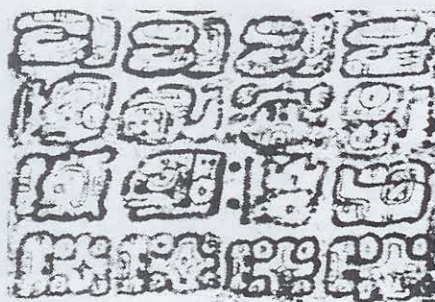
tzeni	tzeni	tzeni	tzeni
Kan-	K'in	Wak	Ak'ab
Pawahtun	Ahaw	Yich	Ahaw
lak'in	nah	chik'in	nohol

Croc	turkey	scorpion	Great ??	Croc	Vulture?	God ?	13-Sky	feeds	feeds	feeds	feeds
[feeds]	[feeds]	[feeds]	[feeds]	[feeds]	[feeds]	[feeds]	[feeds]	4-	Sun	6-Yich	Night Lord
the Great	the Great	the Great	the Great	the Great	the Great	the Great	the Great	Pawahtun	Lord	in the	in the
Star	Star	Star	Star	Star	Star	Star	Star	in the	in the	west	south
in the	in the	in the	in the	in the	in the	in the	in the	east	north		
east	north	west	south	east	north	west	south				





<i>k'alah</i>	<i>k'alah</i>	<i>k'alah</i>	<i>k'alah</i>
<i>nah</i>	<i>chik'in</i>	<i>nohol</i>	<i>lak'in</i>
???	Death	K'awil	Hun
Chak	Chak	Chak	Ahaw
Ek'	Ek'	Ek'	Chak
			Ek'



<i>k'alah</i>	<i>k'alah</i>	<i>k'alah</i>	<i>k'alah</i>
<i>nah</i>	<i>chik'in</i>	<i>nohol</i>	<i>lak'in</i>
Nal	God L?	Wuk	Ain
Chak	Chak	??	Chak
Ek'	Ek'	Chak	Ek'
		Ek'	

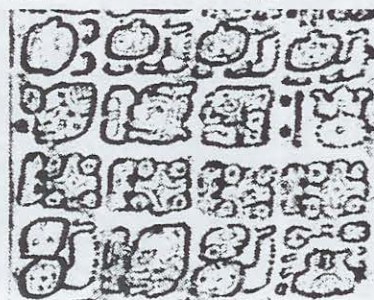
was tied	was tied	was tied	was tied
to the	to the	to the	to the
north	west	south	east
turkey	scorpion	Great ???	Death
Great	Great	Great	God
Star	Star	Star	Great
			Star

was tied	was tied	was tied	was tied
to the	to the	to the	to the
north	west	south	east
Maize	God L	Arma-	Croc
God	Great	dillo?	Great
Great	Star	Great	Star
Star		Star	



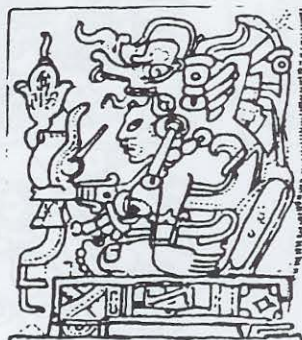
<i>tzeni</i>	<i>tzeni</i>	<i>tzeni</i>	<i>tzeni</i>
<i>Ixik Uh</i>	???	<i>Kimi</i>	<i>K'awil</i>
Chak	Chak	Chak	Chak
Ek'	Ek'	Ek'	Ek'
<i>lak'in</i>	<i>nah</i>	<i>chik'in</i>	<i>nohol</i>

feed	feeds	feeds	feeds
Moon	???	Death God	K'awil
Goddess	Great Star	Great Star	Great Star
Great Star	in the	in the	in the
in the	north	west	south
east			



<i>tzeni</i>	<i>tzeni</i>	<i>tzeni</i>	<i>tzeni</i>
<i>Hun-Ahaw</i>	Nal	God L?	Wuk-??
Chak	Chak	Chak	Chak
Ek'	Ek'	Ek'	Ek'
<i>lak'in</i>	<i>nah</i>	<i>chik'in</i>	<i>nohol</i>

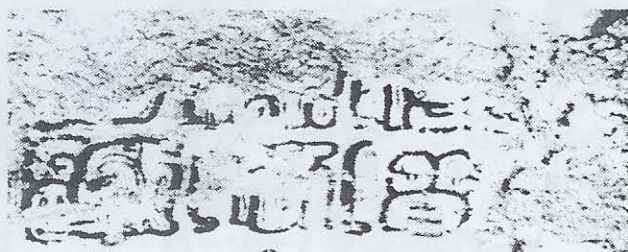
feed	feeds	feeds	feeds
One-Ahaw	Maize	God L?	armadillo?
Great Star	God	Great Star	Great Star
in the	Great Star	in the	in the
east	in the	west	south
	north		



In the picture to the left (the last of the five), we see the Maize God holding a vessel in front of a sky-band throne on which Hun Ahaw sits. It seems that Hun Ahaw receives the vessel from the Maize God. This picture illustrates the *tzen* verb. *Tzen* translates as "to nourish, to maintain somebody", *tzenya* is given as "to nourish/raise a child". Exactly this is shown here. The Maize God is mentioned in the first column of page 50 as the agent of the *k'alah* verb, and in the same column, Hun Ahaw is the agent of the *tzen* expression, perhaps he is "nourished".

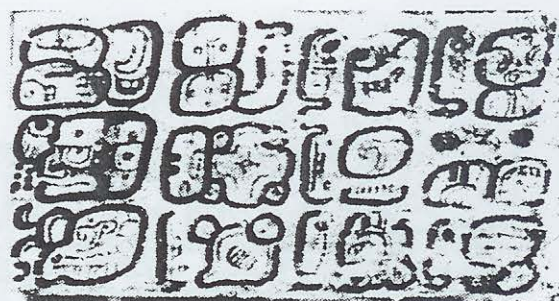
[missing] [missing] [missing]
 ?? nal yah yah ch'ok
 kunal

missing missing missing
 ?? Maize woe to woe to the
 the seats young



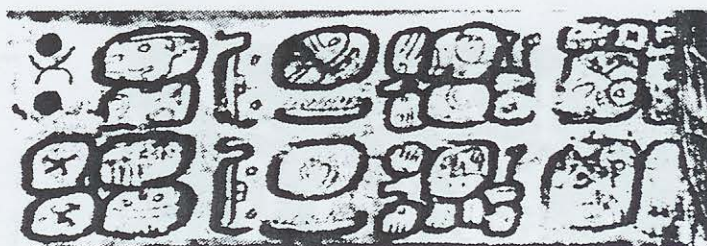
k'alah lak'in
 God L chak ek'
 K'awil u hul
 yah? k'al, yah winik
 u muk hun ka yax k'an
 yah Nal, yah wi'il

Tied to the east
 is God L, great star.
 K'awil is speared,
 woe to the twenty? woe to people,
 is the divination, two-blue-yellow
 woe to the Maize God, woe to the food.



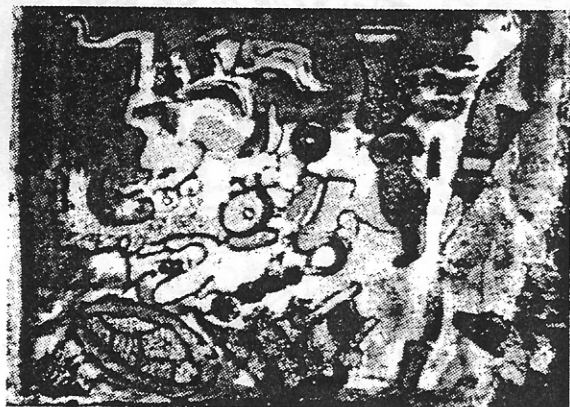
ka uh winik? u muk
 pop tz'am u muk
 mach'ab si ahaw
 mak'ab si ch'ok

two moons month is buried,
 mats and thrones are buried,
 flattened are kings,
 flattened? are the princes.



The first glyph or pair of glyphs in each of the texts accompanying the images of the speared gods seem to be chronological. They always include numbers and glyphs for *u* or *uh* (moon) and *winal/winik*. In Yucatek, *u* is also "lunar month" (*mes lunar*), and is given as equivalent to *winal* "lunación". The distances given in these pages are p.46: two lunations; p.47: one year; p.48: three lunations; p.49: seven lunations; p.50: ten lunations.

The functions of these distances are not clear to us yet. According to the *Anales de Cuahtitlan*, the Morningstar "spears" his enemies during a period of days that can span several succeeding *veintenas* (twenty days). It is also possible that these periods are connected to the following eclipse table in a way we do not yet understand.

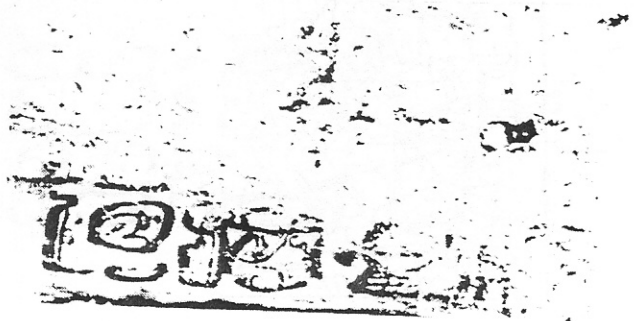


[missing]
u muk
te tok' ba

the prophecy of punishment

[missing]

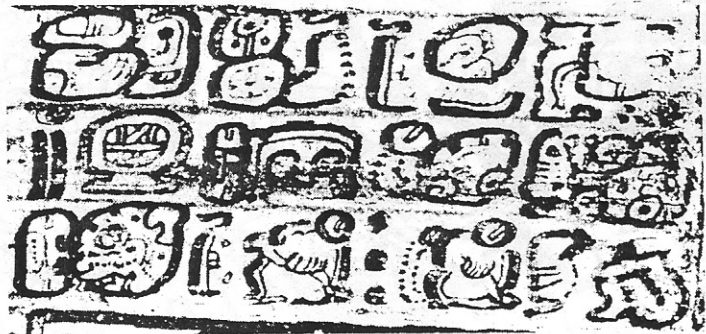
Hun Kanal [Tzuk ahaw] One Sky Bearded Lord



k'alah lak'in
Lahun Chan chak ek'
chak bolay u hul
u muk yol
k'u yah si way ahaw

ox k'uhul yah ??

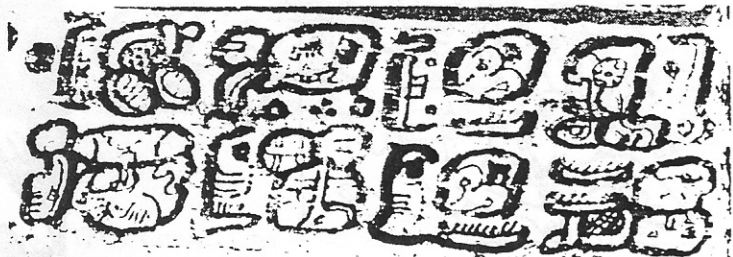
tied to the east
is Lahun Kan, great star
The jaguar is speared,
covered? is the hole of
God ; woe to the born
nawal lords
3 holy perforators
woe to the seated people

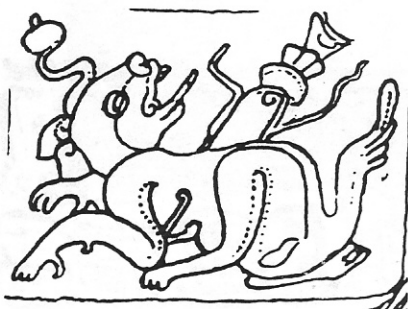


hun u tun ??
tok' bate yah tzul ahaw

u muk k'anawah
yah muk kakatunal

one year ?? bad winds
war with obsidian knives
woe to the lord of the dogs
(foreigners?)
the prophecy of ??
woe to the tomb? Kakatunal



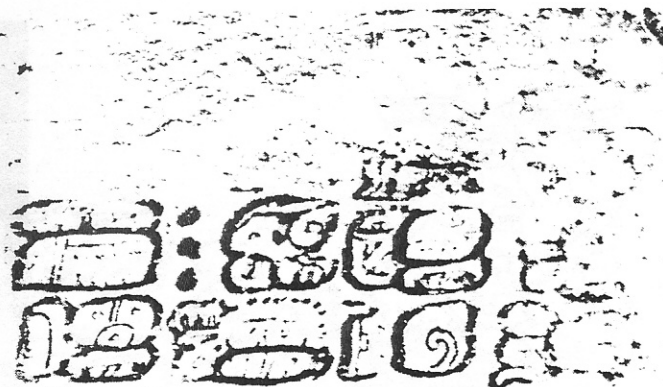


[missing]
ahaw le ox wi'il
nikil sak huk

reign, much food
 flowers, white swaddling

[missing]
puchil ti ???
u muk winik

pus from ???
 is the divination for people



k'alah lak'in
tawisikal chak ek'

tied to the east
 is Tlahuizcalpantecuhtli
 Great Star.

Nal u hul
u muk lak'in
tu kab, tu kun,
u muk kunal

The Maize God is speared,
 his burial in the east,
 in his land, in his seat,
 burial of his seat.

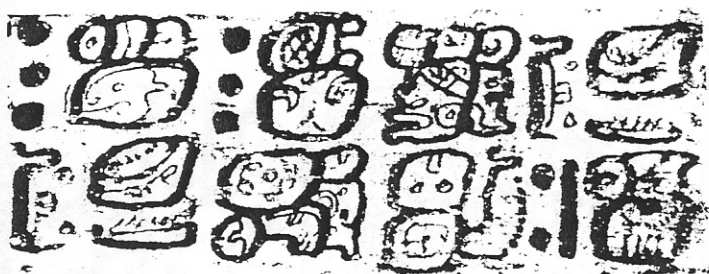


Gordon Whitaker (1985) first read the name of this Venus god as Tawisikal and identified him as a central Mexican god of the Morningstar.

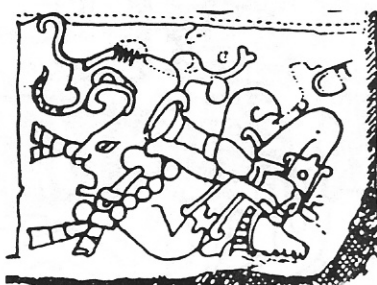
ox ti uh, ox tu winik

Three moons
 three months?
 burial of K'antenal
ahaw; burial
 in the east
 at the seven water place.

u muk k'antenal
ahaw u muk
lak'in wuk ha'nal



*K'antenal is a sacred place that was built at Palenque (TFC), Copan (Temple 11), and Tikal (see STela 31).



[missing]

u muk tz'ak ahaw
ahay tok' te ba

burial of the successor lord
defeat and punishment

[missing]

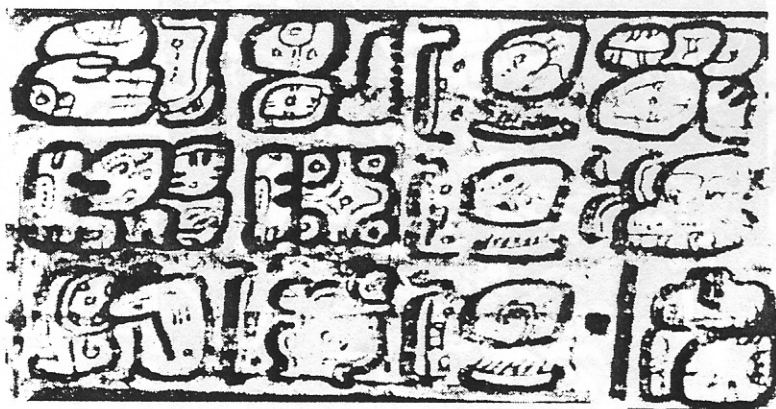
u muk ...
yah kab
yah ??winik??

burial of ...
woe to the earth
woe to the ??people??



k'alah lak'in
Chak Xiwitel Chak Ek'
K'an a?? u hul
u muk K'in Ahaw
u muk K'awil
u muk wak yaxil winik

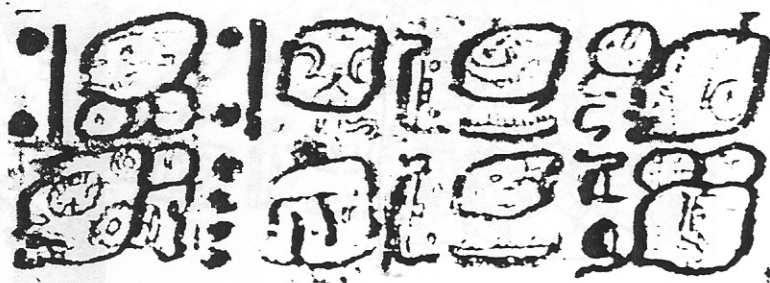
tied to the east is
Chak Xiwitl, great star.
[the toad] is speared
burial of the Sun Lord
burial of K'awil
burial of the
six first people

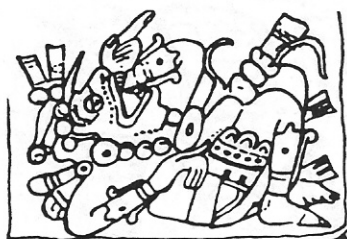
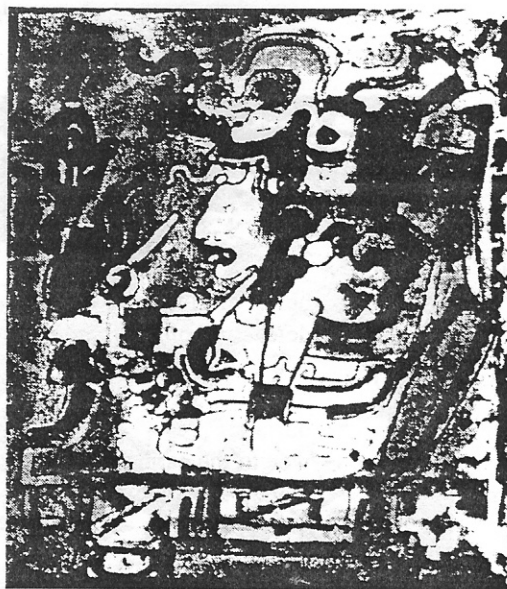


Karl Tabue first read the name of this Venus god as Chak Xiwitel and associated him with the central Mexican god Xiuhtecutli.

wuk ti uh
wuk winik
wa?-nal kan ??
u muk ??
u muk yahaw su

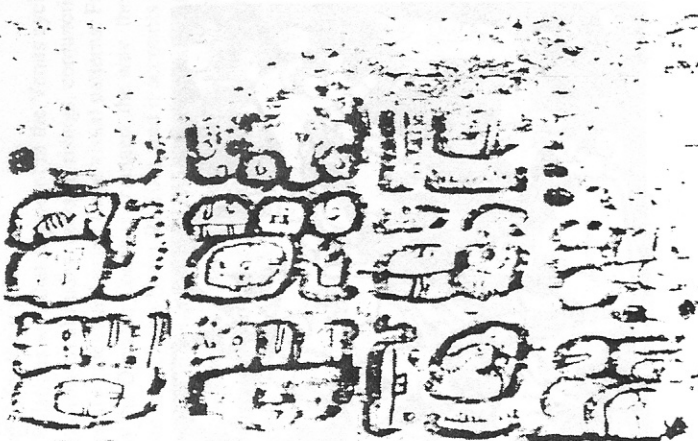
seven moons
seven months
??
burial of
burial of the lord of su





Hun Ahaw Chak Ek'
k'o tun K'in ahaw
xul k'in
xul hab

One Ahaw Great Star
 stomach stone Sun Lord
 end of days
 end of years

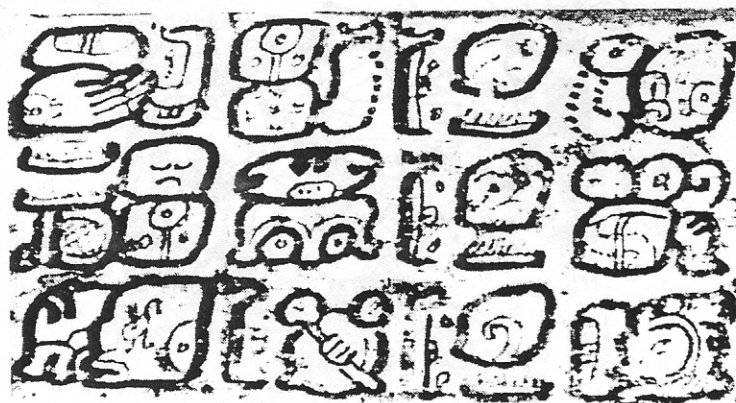


u muk kan . . .
k'a wah ha
sak hun?
u muk kunal

the omen of four . . .
 surfeit of food and water
 white headbands
 the prophecy
 for the seats

k'alah lak'in
kakatunal chak ek'
tz'u-? u hul
u muk k'u
u muk tz'ak ahaw
u muk Nal

tied to the east
 is Kakatunal, Great Star.
 God Q? is speared,
 buried are the gods,
 buried are the royal lineages,
 buried is the Maize God.



Gordon Whitaker (1985) identified this Venus god as Kaktunal, a central Mexican god. Mibraith has suggested that this Mexican deity was a god of frost.

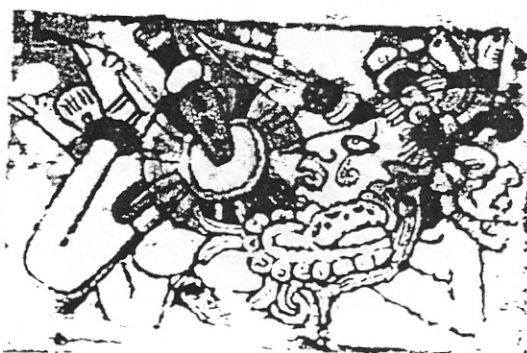
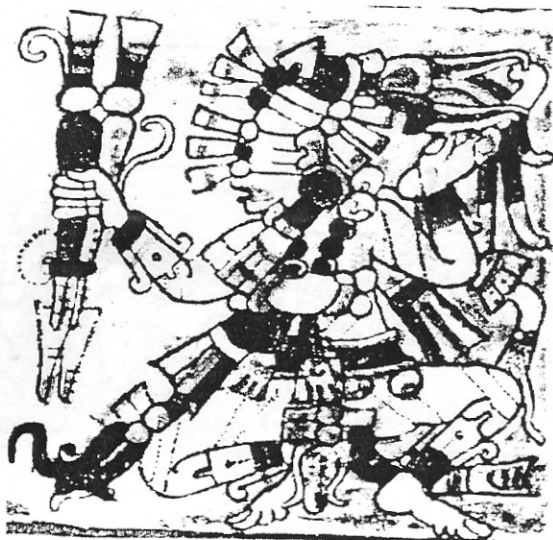
lahun uh winik
u muk
ka yax k'an u muk
sak ta-ba? u muk
tz'ul chik'in

Ten moons-month
 its burial,
 two ??? burial of
 white ??, burial of
 the foreigners
 from the west.





In the uppermost picture, we see the Maize God holding a vessel in front of a sky-band throne on which Hun Ahaw is seated. It seems that Hun Ahaw receives the vessel from the Maize God. This picture illustrates the *tzen* verb. *Tzen* translates as "to nourish, to maintain somebody", *tzenya* is given as "to nourish/raise a child". Exactly this is shown here. The Maize God is mentioned in the first column of page 50 as the agent of the *k'alah* verb, and in the same column, Hun Ahaw is the agent of the *tzen* expression, perhaps he is "nourished".



Charts of Venus and its relationship to the zodiacal constellation.

1997 A New Look

The material in this section was first presented in the 1992 workbook on Creation as a way of plotting how the various stations of Venus interact with the constellations and as a means of detecting maximum elongations. The chart worked better than I believed possible and allowed Venus to be cast into the future for almost an unlimited amount of time. I have come to realize that these charts also have profound implications concerning the way Venus interacts with the zodiac. I will include here the original charts and then present new ones showing how the corrections of 1 x 2340 or 2 x 2340 would effect the patterns. There are three recent interpretations of the zodiacal section of the Paris Codex: the one originally suggested by Dave Kelley, the Bricker pattern, and the Bruce Love pattern. I will follow the Kelley pattern, as we do later in the New Year pages.

1992 Text

These charts started from a comment made to me by Khristaan Villela as I was in the process of writing this workbook and presenting the results of these new insights to my art history seminar. On a break, he commented that I would be challenged about the identification of the scorpion as the constellation Scorpio, because of John Carlson's identification of a Venus-scorpion figure during the last several years. I disagreed with his assessment, but the challenge led me to think about that scorpion figure. Could Venus be combined with the scorpion because some of its major stations fell in Venus. I went home that night and used EZCosmos to check. I started with 9.12.0.0.0, because I knew it was a maximum elongation from Michael Closs's work on the star-shell events. I was also interested in the elongation because Tony Aveni had repeatedly told me that Vicky and Harvey Bricker had shown that the Maya could not have calculated when it occurred from normal visual observation. Although I had no proof, I knew that there had to have been a way of calculating it, because there were just too many dates associated with the elongation. And the contexts of these associations were just too regular and predictable to have been accidental.

9.12.0.0.0 ended up not being in or near Scorpio, so I added 584 days once and then again--and there it was. The elongation of the Eveningstar sitting just in front of the head of the scorpion. Out of curiosity I added 584 days again and then again and then again to find on the sixth revolution that Venus came back to approximately the same position in Leo. I realized this happened because five runs of the Venus cycle of 584 days equalled about 8 years. The Maya used this combined cycle, i.e. 5 X 584 or 8 X 365 for 2,920 days, as the basis of the Venus tables in the Dresden Codex. What I had not really realized until that moment is that the same period of 2,920 days would bring any point in the Venus cycle--the heliacal risings, the disappearances, or the elongations to the same constellation. Thus, any one of the

point could be anticipated and measured by watching Venus's progress at sunrise or sunset against these constellations.

Next, I decided to find out what these points were for a full set of five cycles. Using 9.12.0.0.0 as the base, I printed out the next five elongations using an interval of 584 days. These are in Chart 1, row 1. I then calculated the next heliacal rising of the Morningstar and ran it through five cycles. Then I followed with the Morningstar elongation, Morningstar disappearance, and Eveningstar heliacal rising. I printed out the sky at each repetition and then traced the constellation where Venus was. The results are given in Chart 1. They may be a little inaccurate by modern standards, but they approximate fairly closely what the Maya would have known.

I then became curious about what would happen over a longer period. I chose the third, Scorpio elongation and added 2,920 thirteen times to find out what happened over the Grand Venus Cycle contained in the Dresden Codex. Venus moved one constellation along the ecliptic during that time. See Chart 2 for the results.

Then using 9.12.0.0.0 as the base I subtracted Grand Cycles (37,960 - 5 days) until I reached the Late Preclassic period. And, I added them until I hit the thirteenth century. See Chart 3 for the results.

The result of these calculations was that any point in the Venus cycle, including the elongations, maximum altitudes, heliacal risings, conjunctions, and disappearances were very easily calculated using these visual patterns. Furthermore, the pattern matches the way the Dresden Codex is arranged, the way the 2,920 repetition was used at Copan (see Copan Notes 99-101), and it accounts for the variation in the elongation calculations--up to 15 days off. If the elongations were calculated according to their position in a constellation, the Maya would not have been able to adjust for variation in a particular orbit through visual observation as they could with heliacal risings.

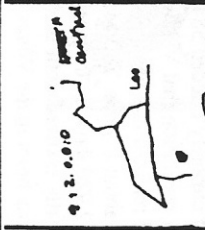
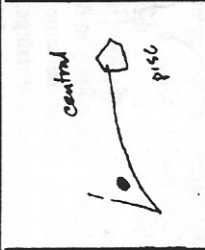



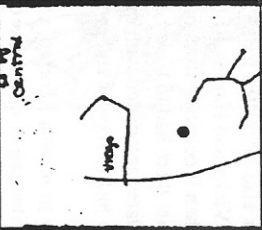
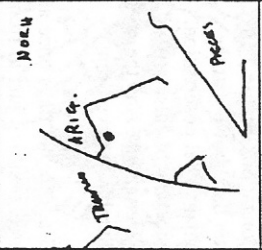
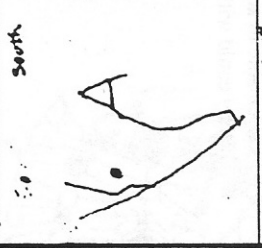
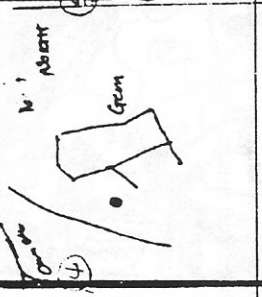
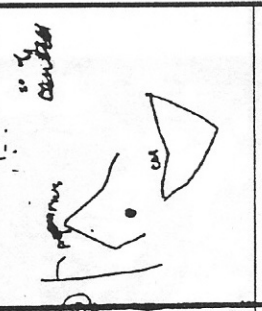

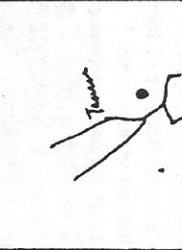


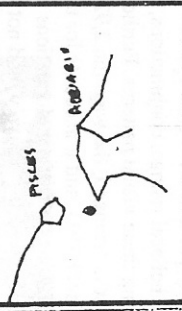
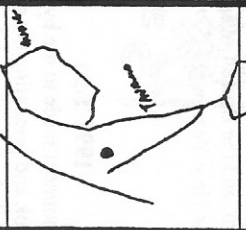
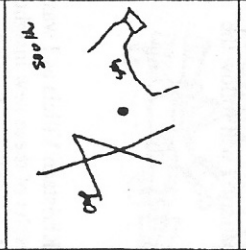
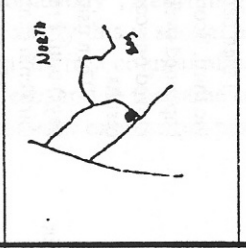
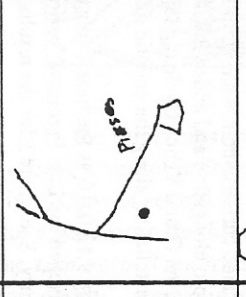
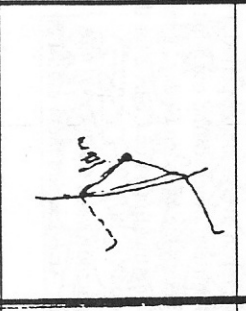
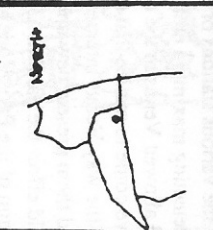
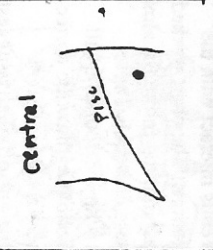

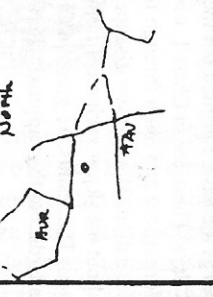

	1	2	3	4	5
9.12.0.0.0 base Eveningstar elongation					
Morningstar heliacal rising					
Morningstar elongation					
Morningstar disappearance					
Eveningstar heliacal rising					

Chart 1: The stations of Venus in constellations through a 5 x 584 / 8 x 365 run of the Venus cycle. This cycle coordinates the cycle of venus with the haab and the constellations in the ecliptic

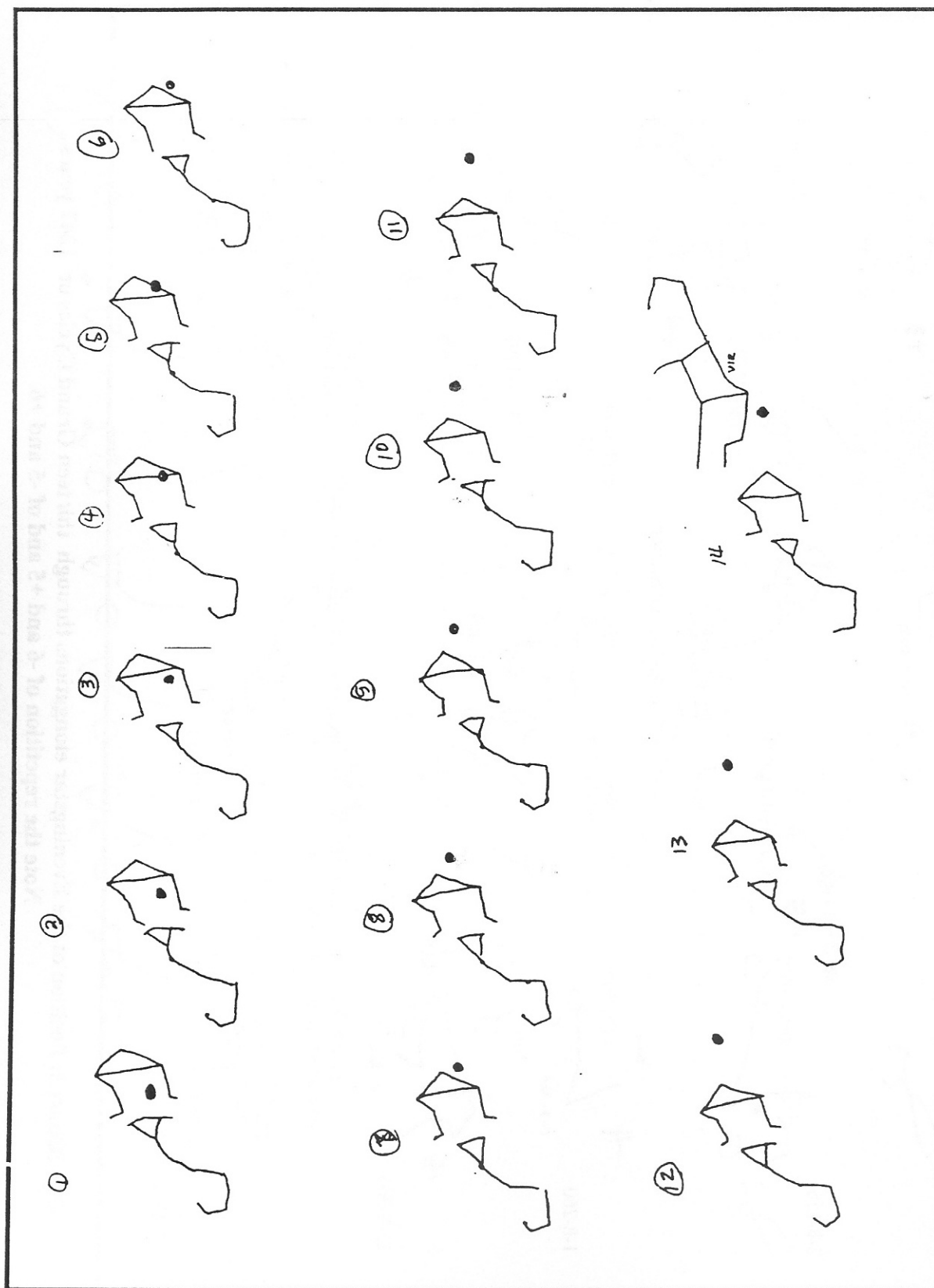


Chart 2: The position of Eveningstar elongations (third position of Chart 1) at the end of each 5 x 584 (2,920 day) cycle thorough fourteen repetitions--one Grand cycle plus one 5 X 584 (37,960 + 2,920 days or 111.92 years)

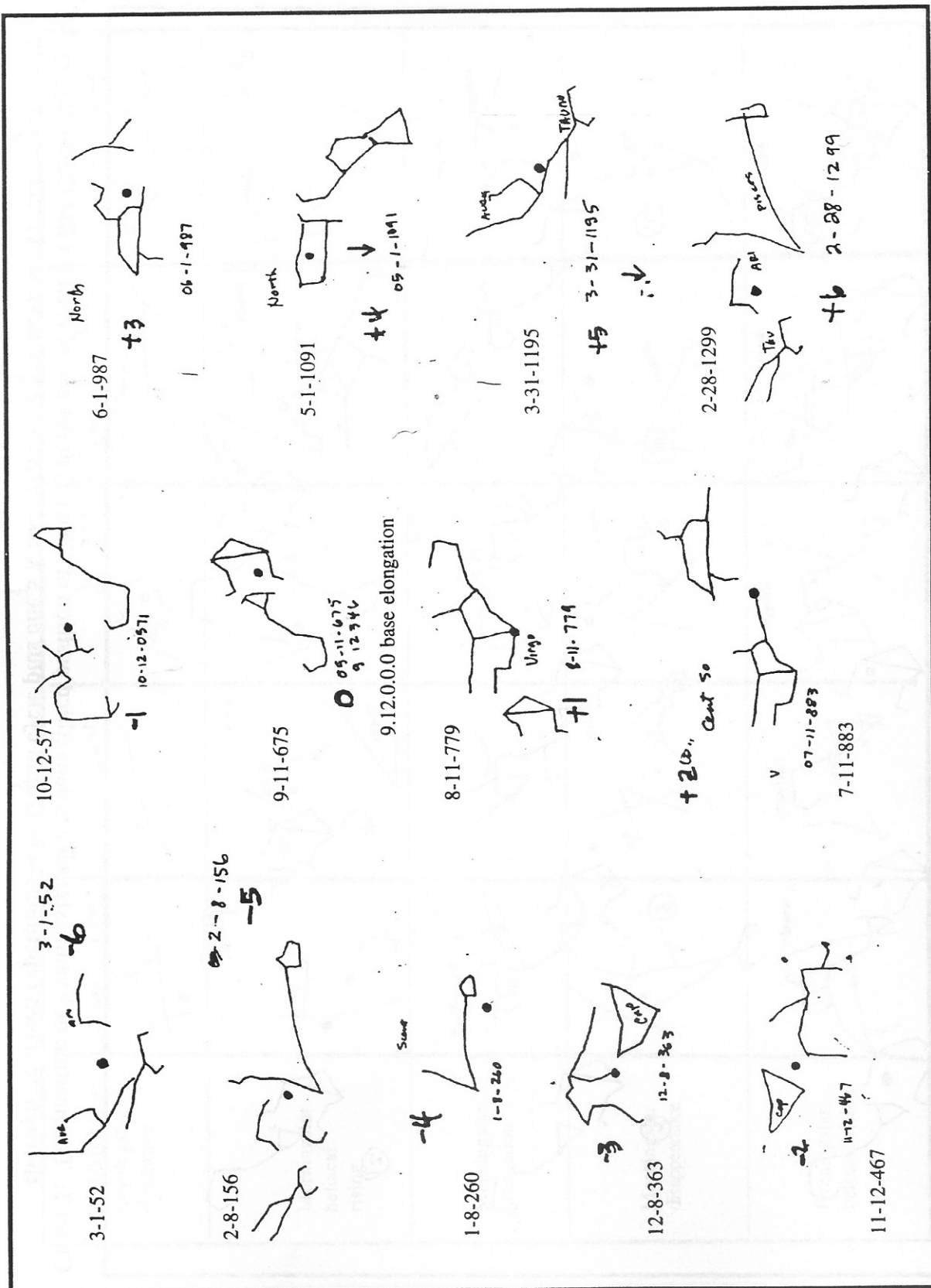
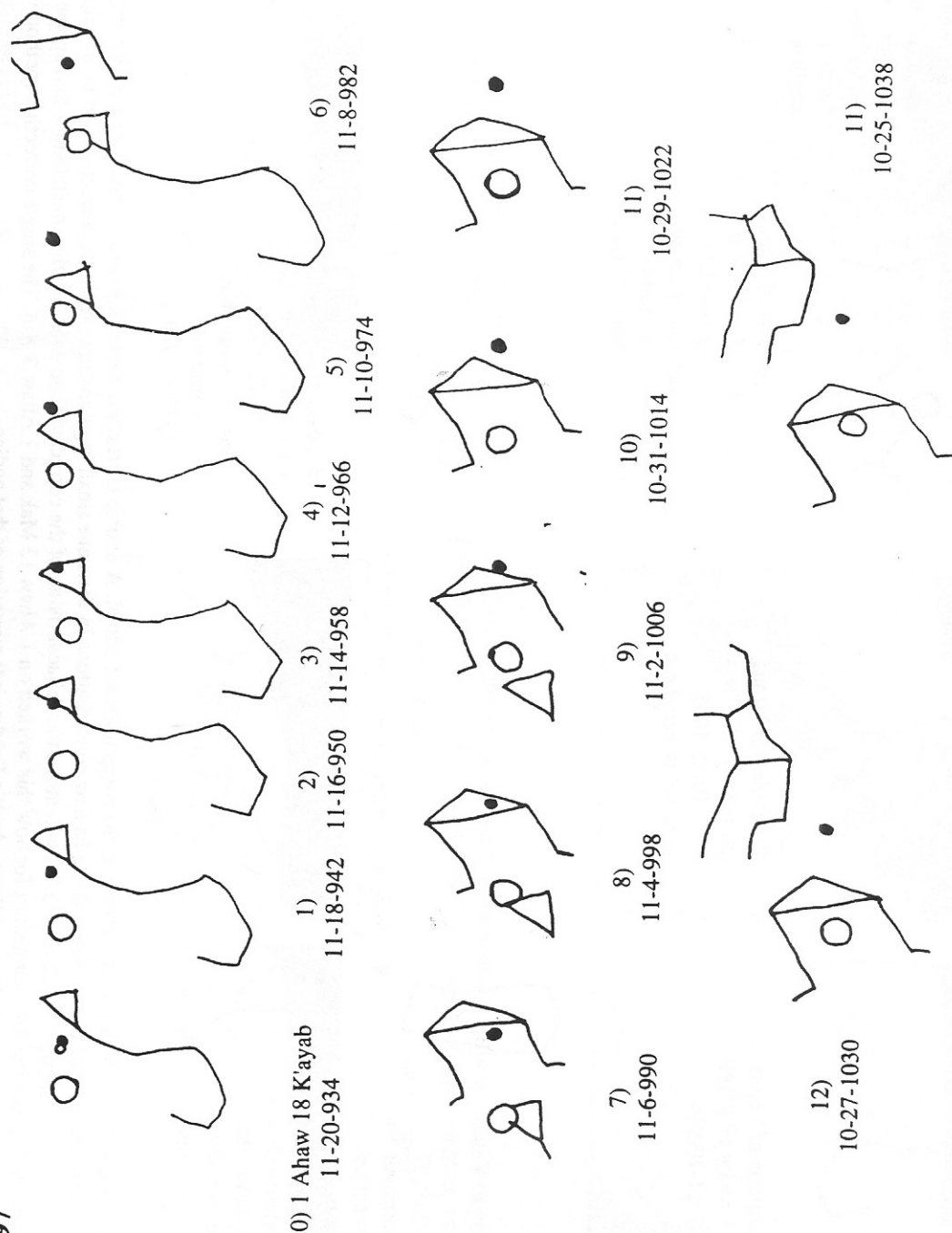
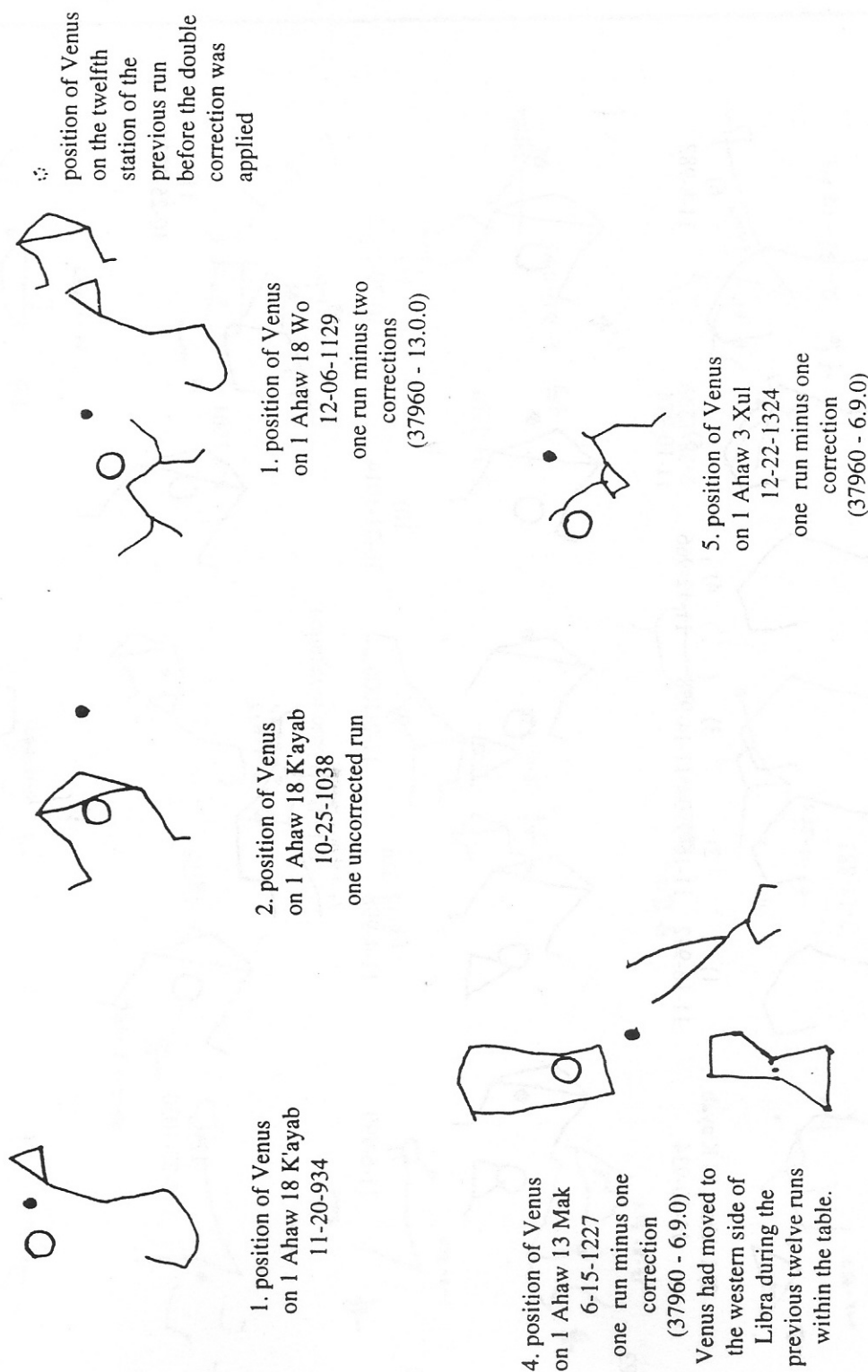


Chart 3: Position of the Eveningstar elongations through thirteen Grand Cycles or 1247 years.
Note the repetition of -6 and +5 and of -5 and +6.

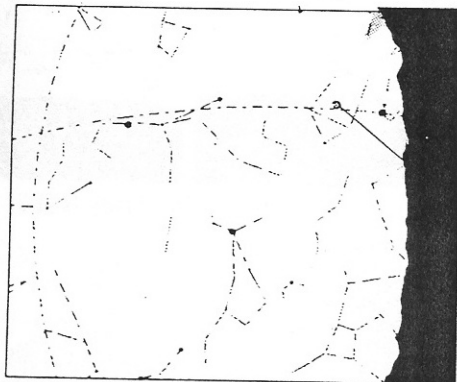
New 1997



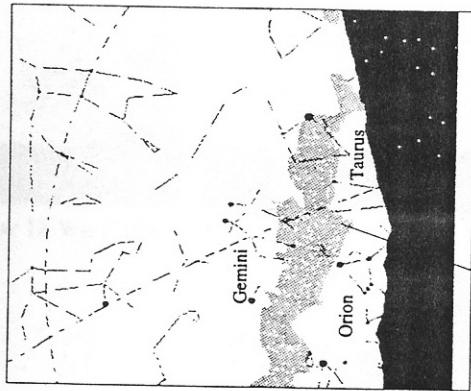
Position of the heliacal rising of the Morningstar during the first run of the Venus table according to Lounsbury's analysis. Notice that Venus moves slowly and predictably across the head of Scorpius, through Libra, and into the edge of Virgo.



This chart shows the relationship of Venus to the zodiac as the corrections are added. A double correction moves the heliacal rising of the Morningstar back three constellations. Thereafter the heliacal rising moves along its new constellations in the same small regular steps. A single correction can be anticipated on the twelfth heliacal rising in a run. A single correction of 6.9.0 will move the heliacal rising of the corrected base date into the constellation that appears on the western horizon of the twelfth rise. See the following chart for how this worked on 1 Ahaw 13 Mak and 1 Ahaw 3 Xul. The single correction method works like the eclipse predictor proposed by Kelley for the Paris zodiac or for the Bricker interpretation of that zodiac.



Venus
eastern view



position Venus had after the correction was applied
western view

These are the eastern and western horizons on the day of the heliacal rising of the Morningstar in twelfth station of the 1 Ahaw 18 Wo run of the table.

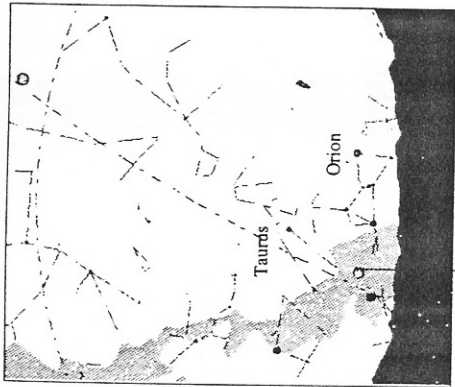


Venus
eastern view



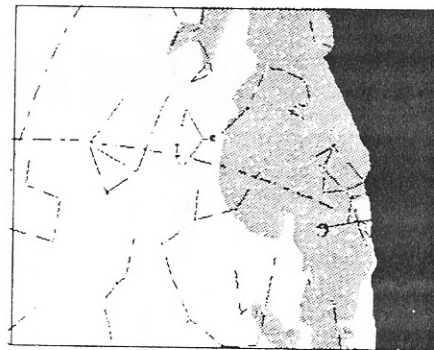
position Venus had after the correction was applied
western view

These are the eastern and western horizons on the day of the heliacal rising of the Morningstar in twelfth station of the 1 Ahaw 13 Mak run of the table.



Venus

Eastern view on 1 Ahaw 13 Mak showing the effect of a 6.9.0 correction



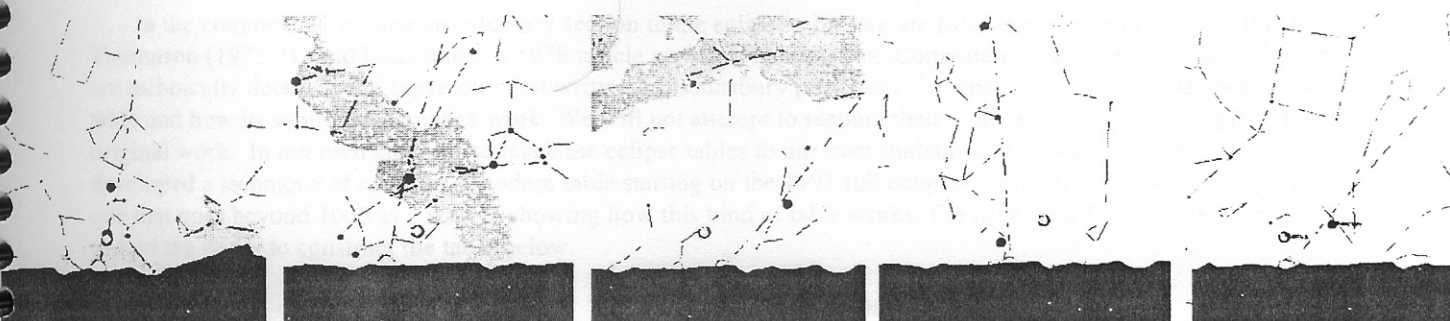
Venus

Eastern view on 1 Ahaw 3 Xul showing the effect of a 6.9.0 correction

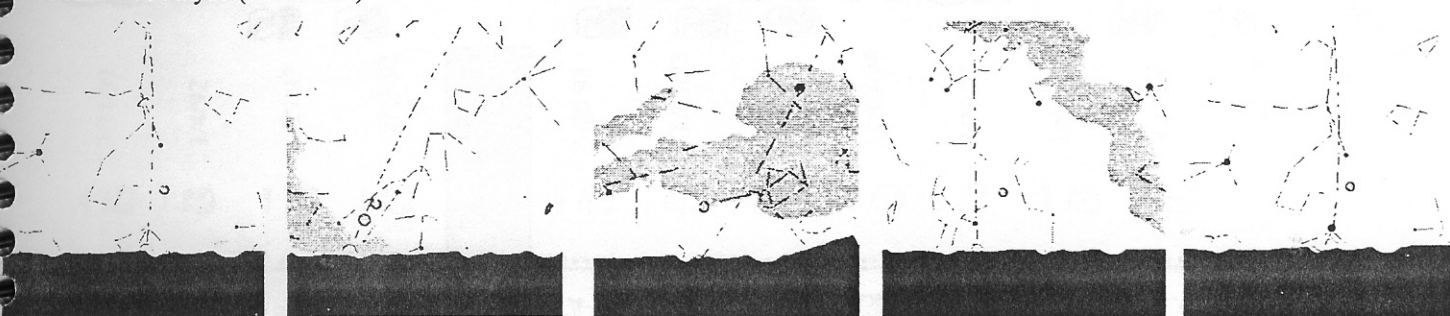
After checking out the effects of the 6.9.0 and 13.0.0 corrections on the interaction of Venus with the zodiac, I decided to see how a standard run of the Venus table worked. Here is the pattern:

heliacal risings of the Morningstar	+ 236	Morningstar stations	+ 90	heliacal risings of the Eveningstar	+ 236	disappearance of the Eveningstar	+ 8
Scorpius		Gemini		Libra		Gemini	
Gemini		Aquarius		Cancer		Aquarius	
Aquarius		east Leo / west Virgo		Capricorn		east Leo / west Virgo	
east Leo / west Virgo		Aries		Leo		Aries	
Aries		Scorpius		Pisces		Scorpius	

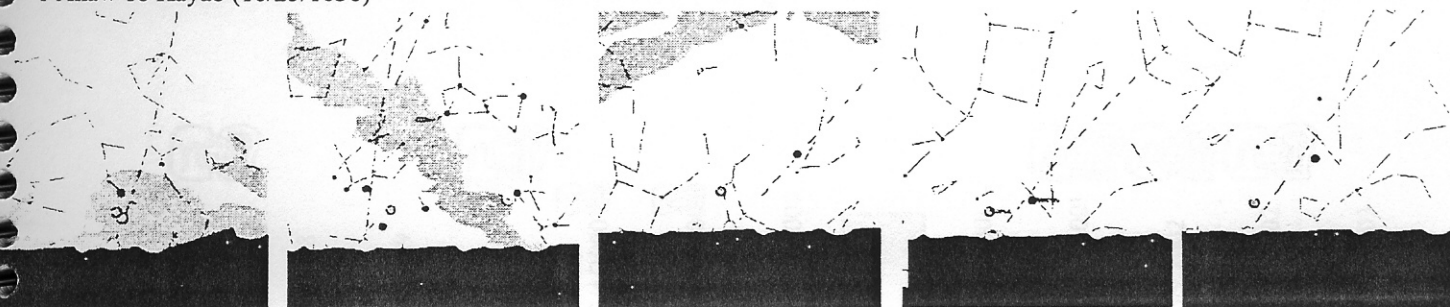
Positions of the heliacal rise of the Morningstar in each run of the Venus table



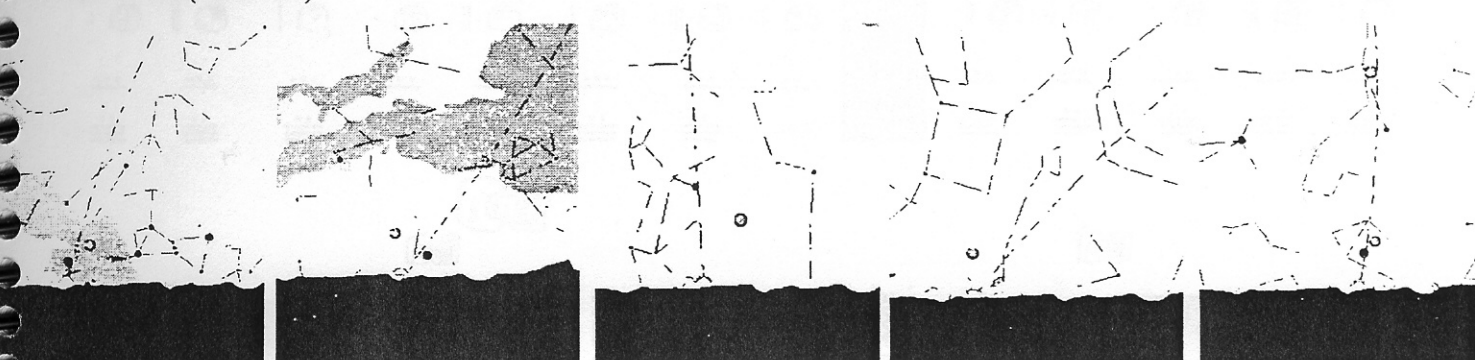
1 Ahaw 18 Kayab (11/20/934)



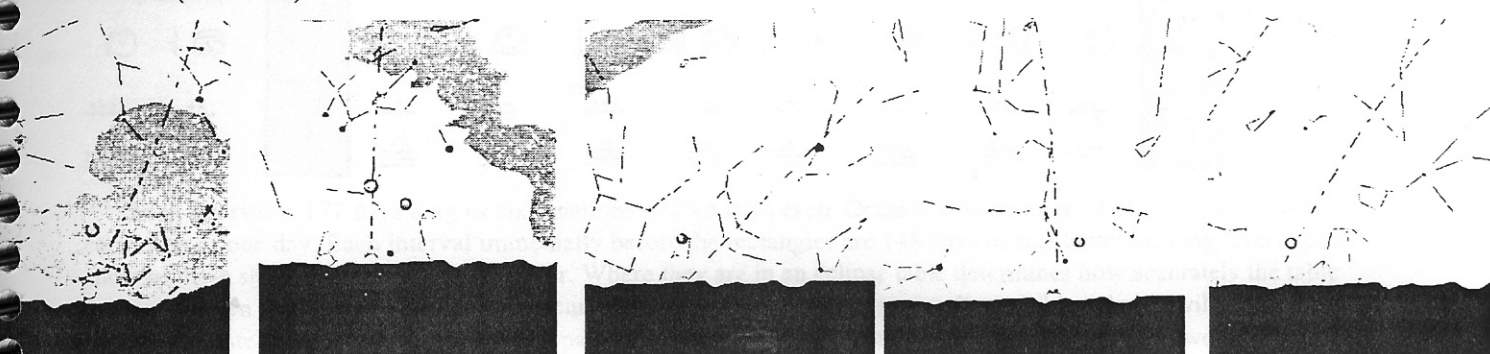
1 Ahaw 18 Kayab (10/25/1038)



1 Ahaw 18 Wo (12/6/1129)



1 Ahaw 13 Mak (6/15/1227)



Ahaw 3 Xul (12/22/1324)

The Eclipse Table

[illegible]

9/1/97	2/25/98	8/21/98	2/15/99	8/11/99	2/4/2000	7/30/2000	12/15/2000		6/20/2001	12/14/2001

		11/23/2003
		4/29/2004
		10/13/2004
		4/8/2005
		10/2/2005
		3/28/2006
		9/22/2006
		3/18/2007
		9/1/2007
		2/6/2008
		8/11/2008
		1/25/2009

1997 Maya Hieroglyphic Forum 168

4 Ahaw 8 Kumk'u

1997 Maya Hieroglyphic Forum 169

??? Itzamna

??? Ek'

??? Kan

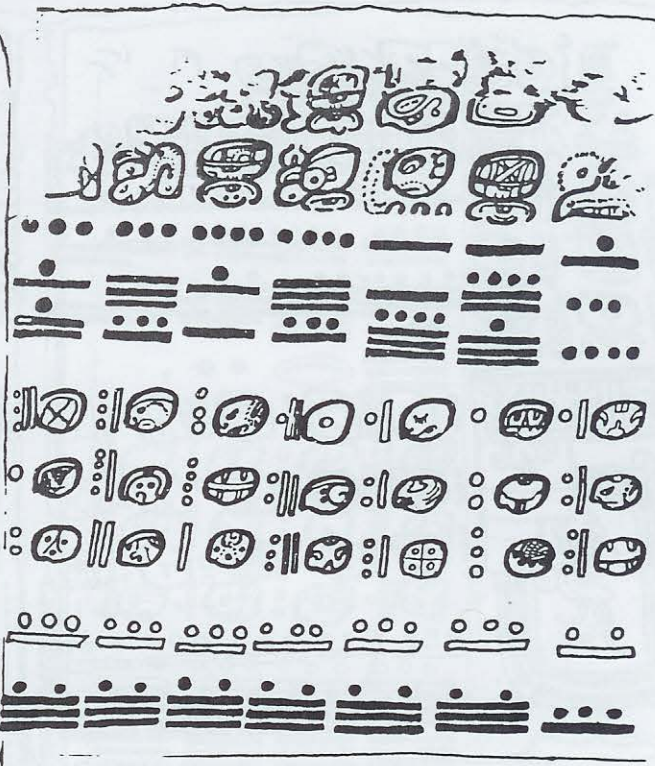
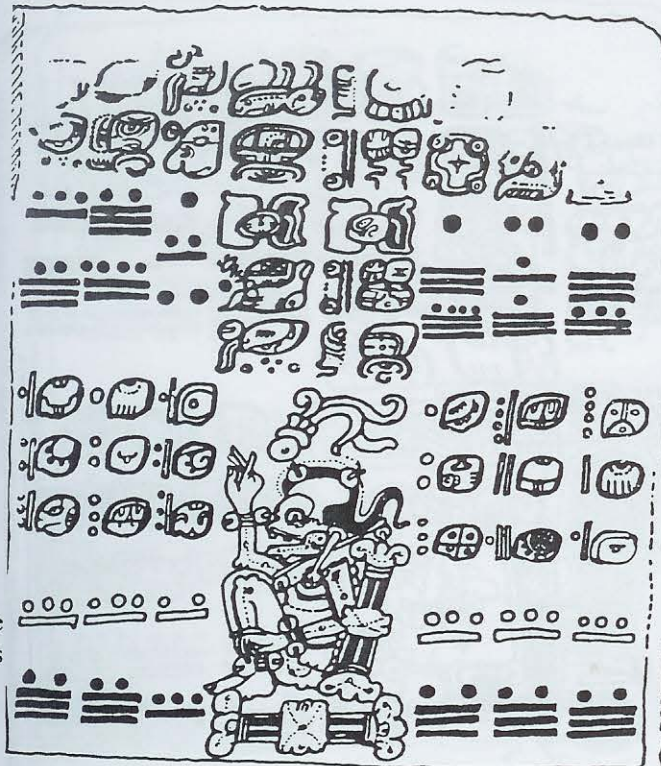
??? Kan

?? kan ti un

?ha k'u ok

??? kan

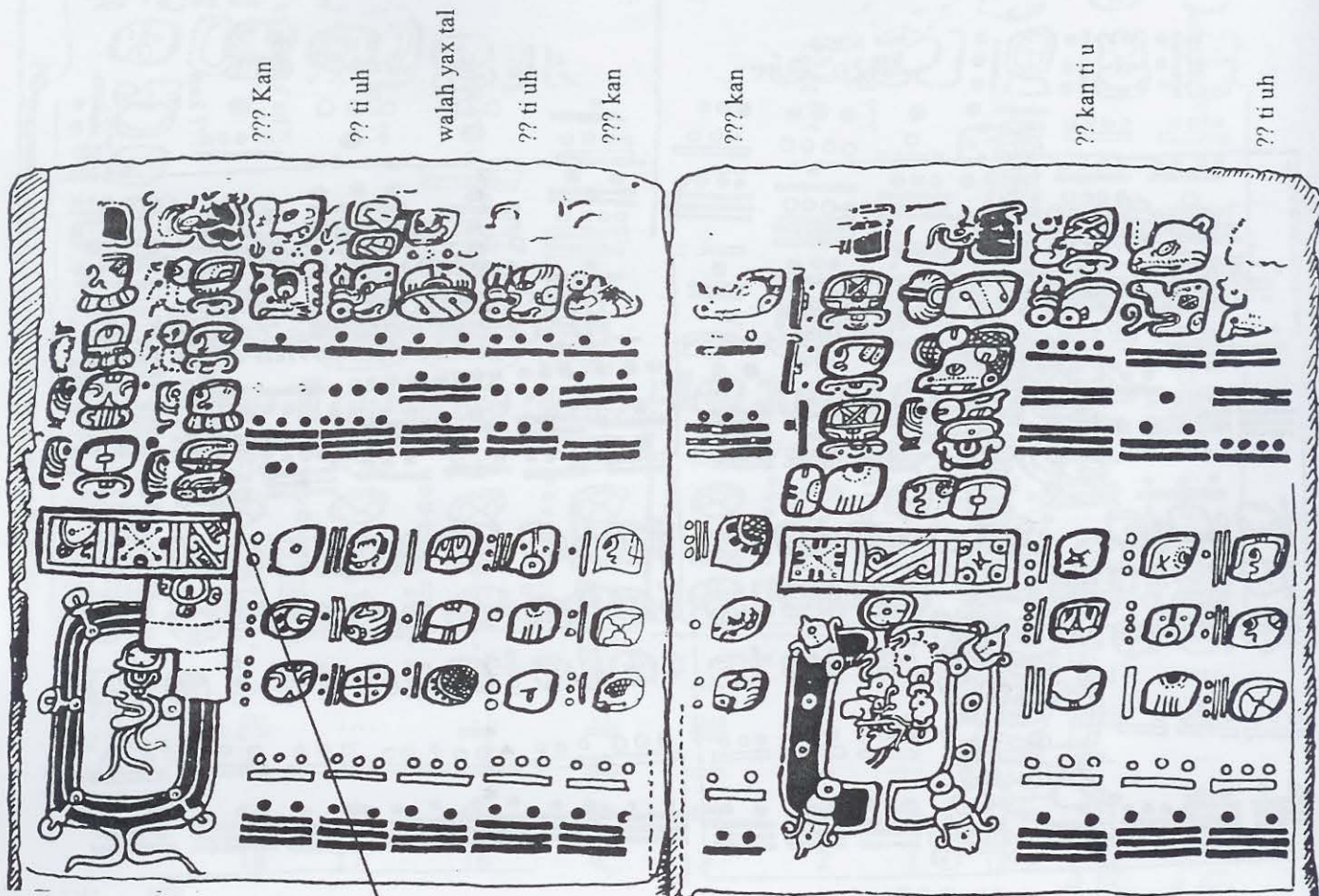
??? kan



??? men
yah kab
kan Ah Ahaw ??
??? ???
ta Hun Kanah Ah Tzuk
Ahaw
??hul Yah kun

**Death God on
bone throne**

???
damage the earth
sky, the lord ???
eclipse of the sun
eclipse of the moon
by One Sky
Bearded Lord
bad omen or wind
damage to the seats



??? ???
 ?? kab
 ?? k'u kan
 ?? kan ??k'u kab
 yah winik yah kab
 yah kun yah kan

eclipse of the sun
 eclipse of the moon
 ?? earth holy sky
 sky? holy earth
 damage to the people
 damage to the earth
 damage to the seats
 damage to the sky

**Old Sun God
 with garment
 and flower
 opening**

The last sign in this text depicts two hands touching finger tips to heel. The phonetic context suggests that it has the value *na*.

??? ???
 u kan yaxtal
 u kab ???
 wak kan yah ??nal
 chak ha kab kun

eclipse of the sun
 eclipse of the moon
 its sky first
 its earth ???
 six or raised sky
 great rain
 earth seat

**Chak with
 sun and flower
 opening**

??? u

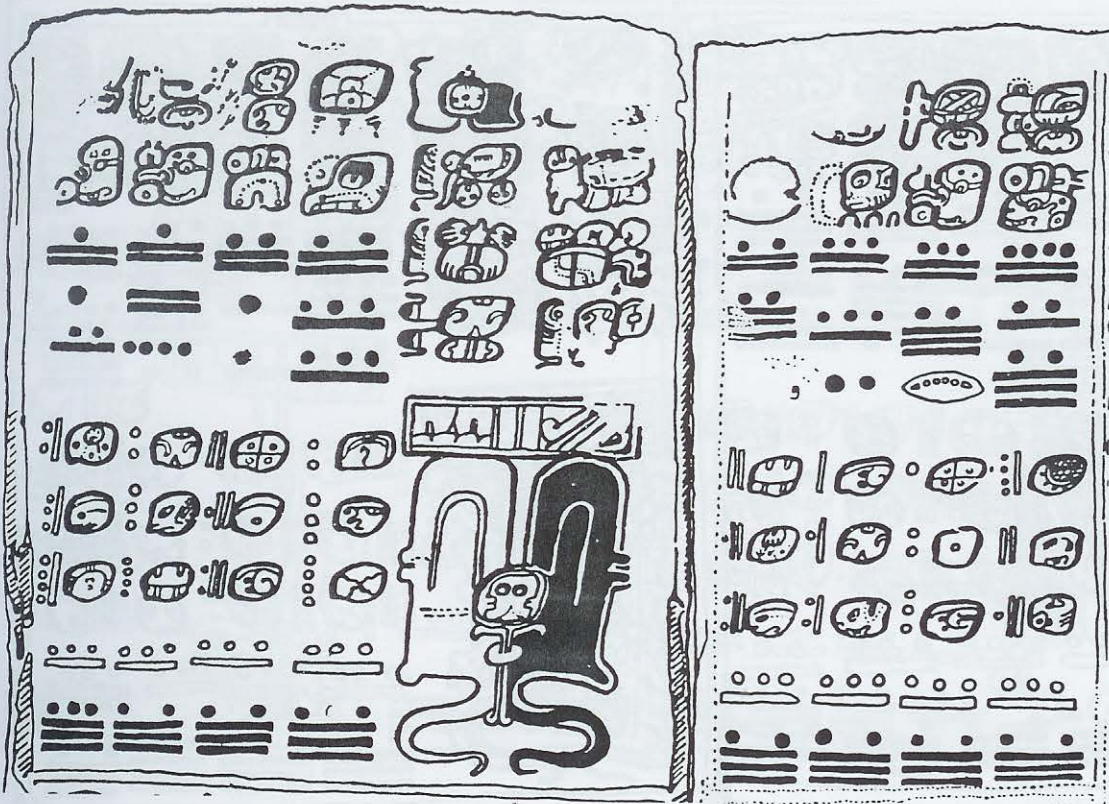
?? ti u

??? kan

??ha k'u ok

na kan ti u

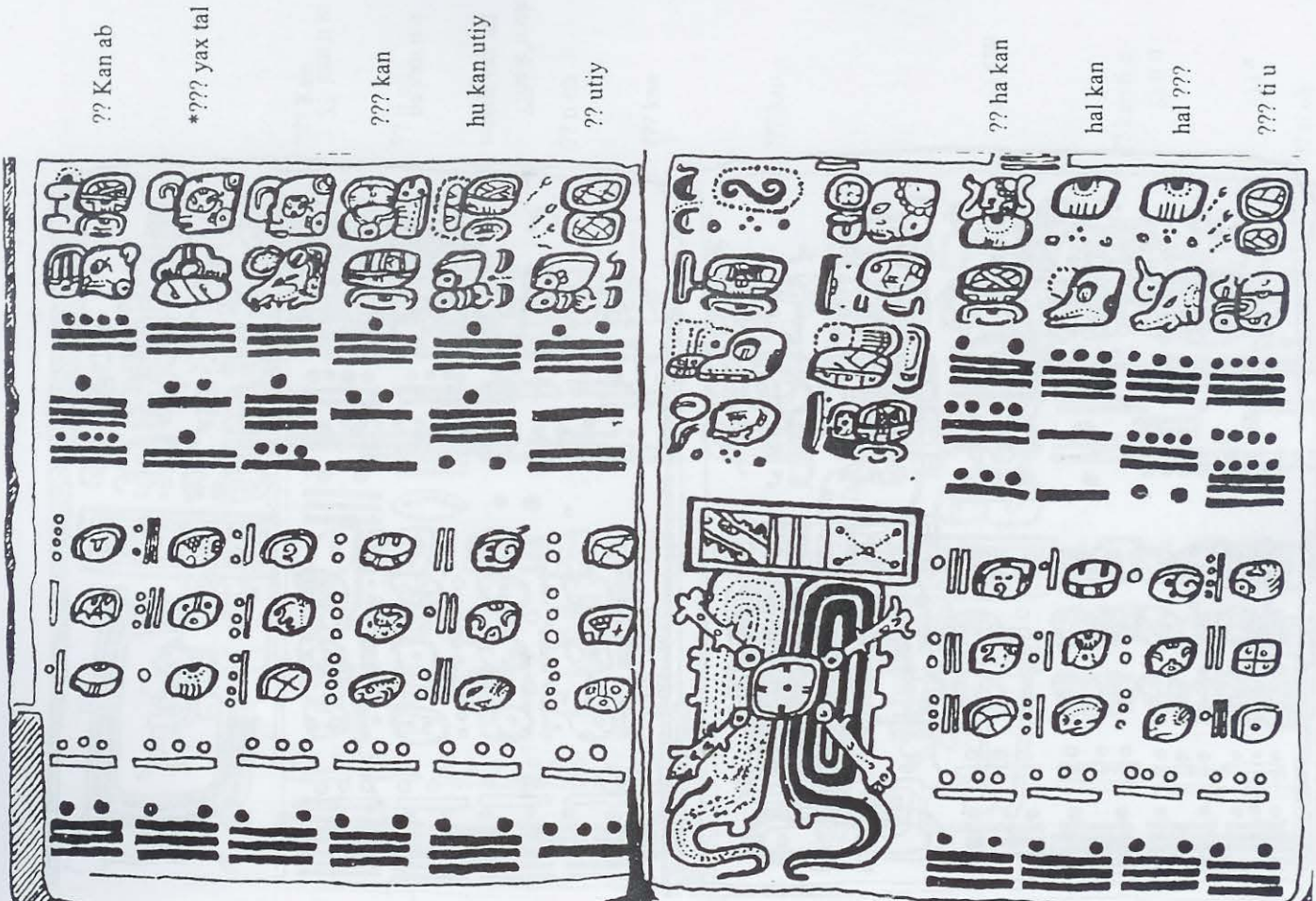
?? kan ti u



Kun-seat
over eclipse

??? ???
yah ??hul ???
yah nohol tz'ak ahaw
k'ak' winik
yah kab kun

eclipse of the sun
eclipse of the moon
damage to ??? ???
damage to the south
successor lords
(or dynasties?)
fire people
damage to the earth seats



* This verb has not been deciphered but Dave Kelley long ago pointed out that it also occurs on Quirigua Stela E for the same date, 9.17.0.0.0. Epigraphers have long known that 9.17.0.0.0 is the only k'atun ending history to have been recorded as an eclipse station. In the 584,285 correction this day corresponds to an eclipse. According to all the computer programs, to Richard Johnson's list, and to Kudlek's list of solar eclipse there was one, but at less than 10% visibility at Quirigua. However, 15 days later on February 4, there was a total lunar eclipse in the early morning hours that confirmed the eclipse station. It happened that the moon was near Saturn in the conjunction and that the sunset of that day saw the heliacal rising of the Eveningstar. The eveningstar rising is also recorded at nearby Copan. For Linda this eclipse station recorded both at Quirigua and in the codex is why she prefers the 584,285 correlation for the Classic period.



ya muyal
 ??? huy na?
 na kan u kahi
 ??? kan
 k'atah or patah
 ??? u k'an kan

sun with flowers

damage? to the clouds
 companion woman
 house sky,
 he did it
 the ??? snake
 it was formed
 ????

its yellow or precious sky

??? k'u ok

??? k'ak' k'in

??? wah

?? ti u

ha kan kan

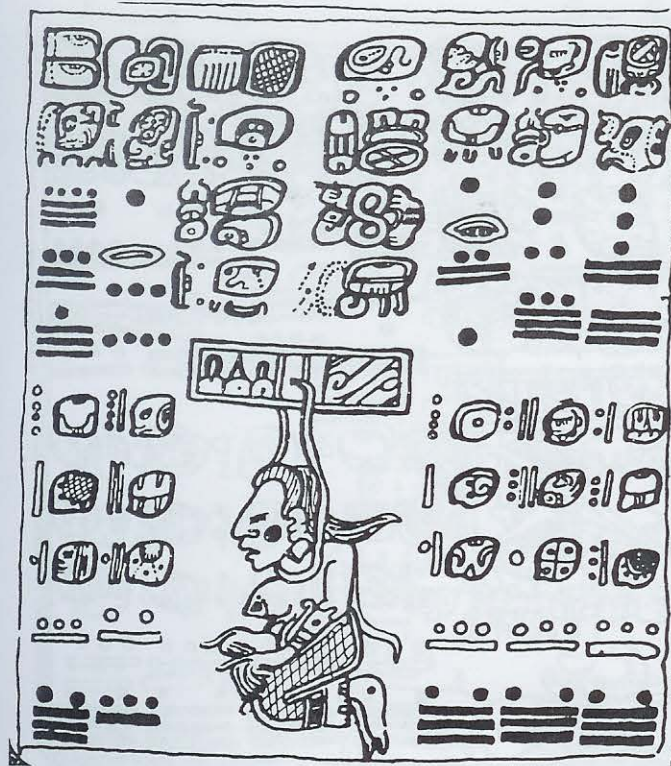
ha kan kan

??? k'u ok

nak kan

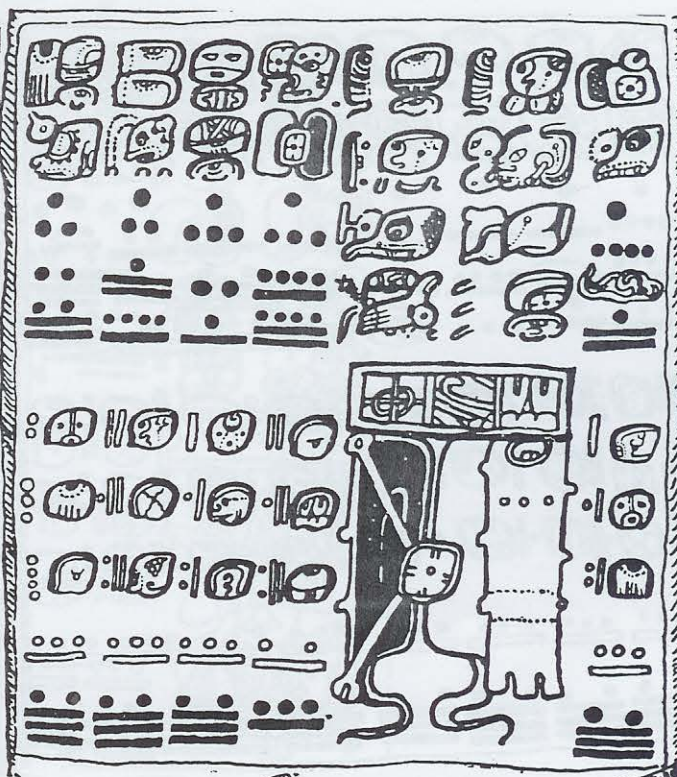
k'in ?? uh ??

?? kan



saphal
u ek'el kotz'
ti u lob ?? yax
u kahi
??? kan

Hanging goddess



sun with bone
lancets and
garment

yah kan yah kab
u kahi ??
na kan yom
ta kanal
o kun

Saphal is glossed in the Cordemex as "do not give for festival or games." *Ek'el* has several meaning, including *ek'el ek'*, "juego de pelota," but here it may simply be black or dark. *Kotz'* is something rolled up. The picture shows a hanged goddess, but we are not sure how the image relates to the text. The action takes place at the moon and we appear to have a negative omen in *lob*. The last phrase record that some form of the sky caused it to happen.

damage? to the sky
damage? to the earth
he did it ???
snake pregnant
in the heavens
?? seat

??? uh

hal kan

hal ???

?? kan

?? kan

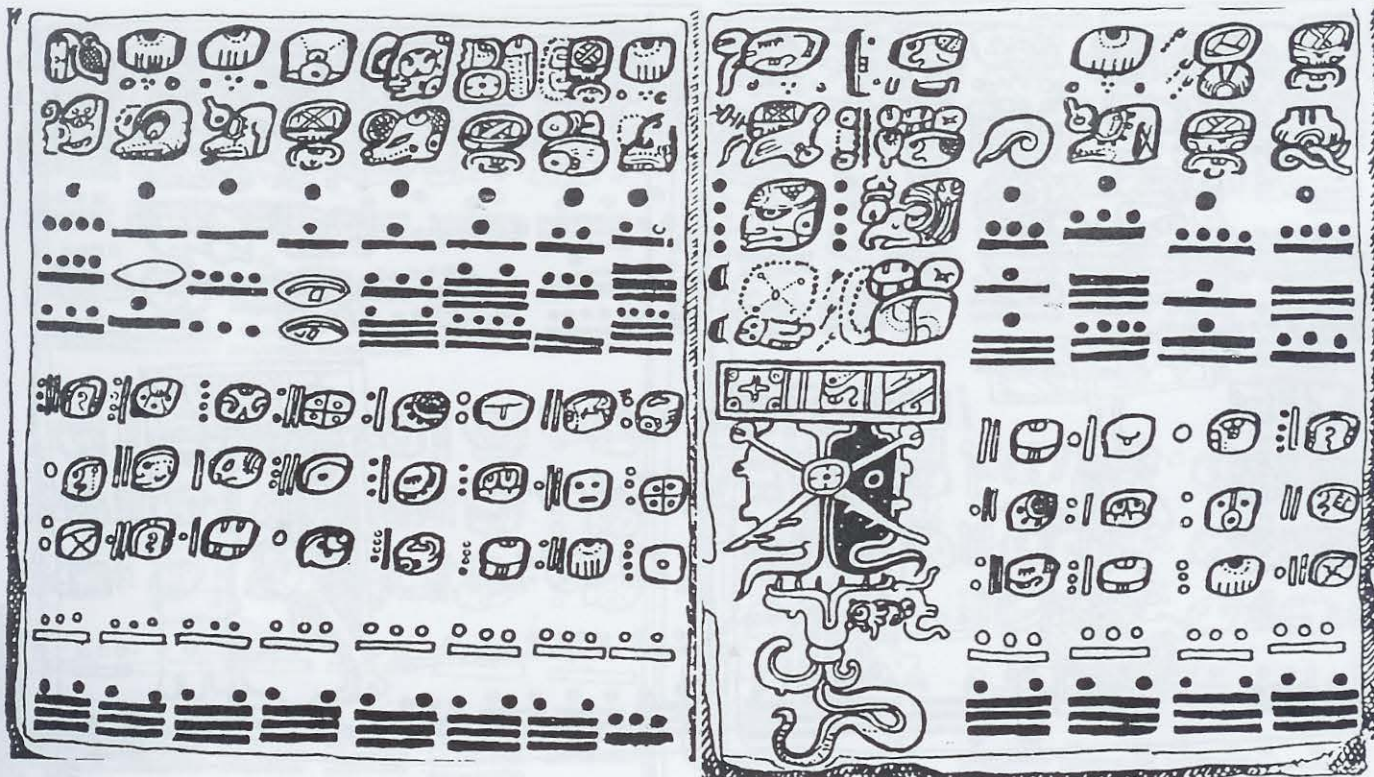
hu kan ti u

hal kan

hal ??

?? kan

kan yax tal



??hul u kahi
ta kanal

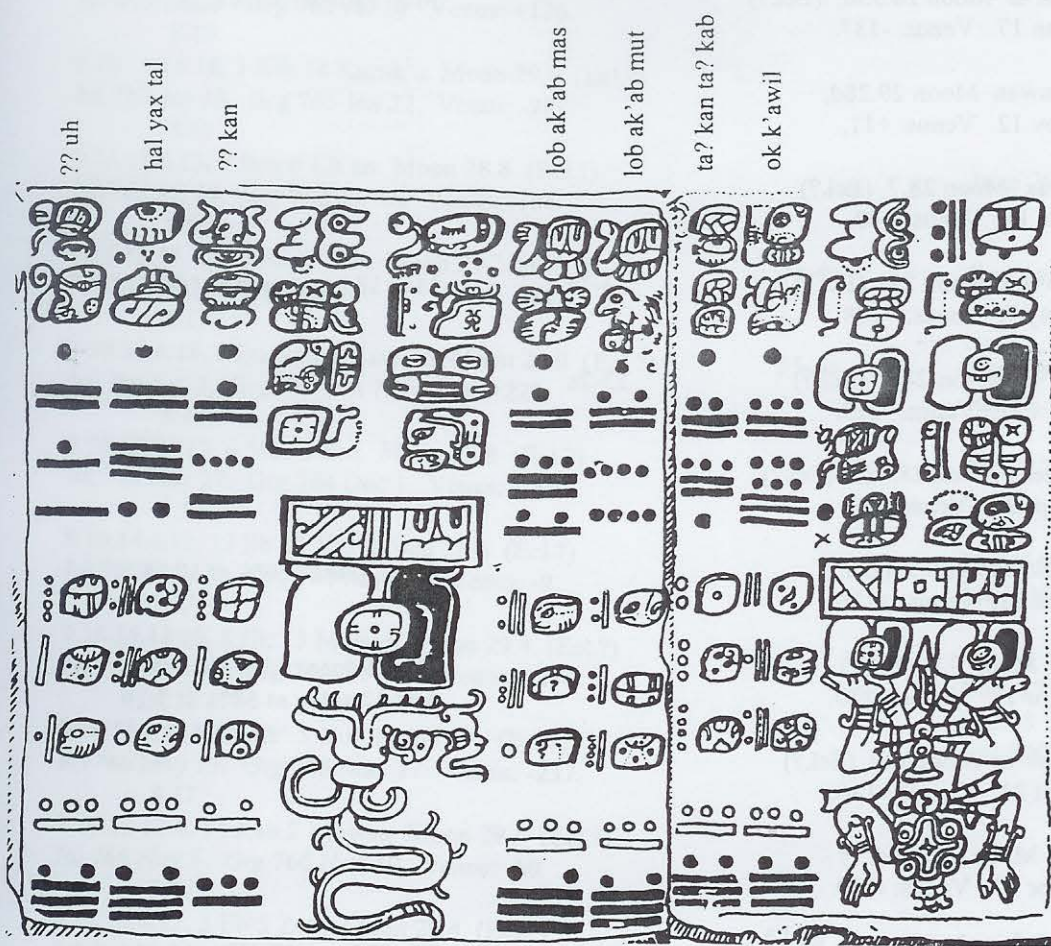
Ah ? kab Ahaw
Kan Pawahtun
Kan tahol

Ya ???nal ?? tz'ak ahaw

sun with
crossed bone
lancets

?? he did it
4 Pawahtun
4 Vulture
???

?? successor lord



eclipsed
sun with
snake

em ek' ??hul
tz'ak ahaw
u ???
bak ch'ok
k'in sa

descending
Venus god

em ek' 13 ab
yah kun
yah tzam ahaw
??? ???
Hun Kanah
Ah Tzuk Ahaw
hun k'atun ?? ok

descended the star
"bad omen"
succession lord
his ???
bone youth
sun ???

descended the star
13 years
damage to the seats
damage to the throne
lords
eclipse of the sun
eclipse of the moon
One Sky Bearded Lord
one k'atun ???

Chart of the Eclipse Table in the Dresden Codex

Eclipse stations using Lounsbury's program	Dresden hits	actual eclipses
9.16.3.12.3, 12 Ak'bal 1 K'ayab Moon 29.12d; (Ecl.?) Jul 754 Dec 18. Grg 754 Dec 22. Venus: +270. 8.17		
9.16.4.3.0, 7 Ahaw 13 Yaxk'in Moon 28.93d; (Ecl.?) Jul 755 Jun 13. Grg 755 Jun 17. Venus: -137. 7.8		May 29 lunar 96% U at 23:30
9.16.4.10.8, 12 Lamat 1 Muwan Moon 29.28d; Jul 755 Nov 8. Grg 755 Nov 12. Venus: +11. 8.17		
9.16.4.11.17, 2 Kaban 10 Pax Moon 28.7 (Ecl.?) Jul 755 Dec 7. Grg 755 Dec 11. Venus: +40. 7.8		
9.16.5.1.5, 7 Chikchan 13 Tzec Moon 29. (Ecl.?) Jul 756 May 3. Grg 756 May 7. Venus: +188. 8.17	53-1a	May 18 lunar total at 16:08
9.16.5.10.2, 2 Ik' 10 K'ank'in Moon 28.9 (Ecl.?) Jul 756 Oct 27. Grg 756 Oct 31. Venus: -219. 8.17	53-2a	
9.16.6.0.19, 10 Kawak 2 Tzec. Moon 28.73d (Ecl.?) Jul 757 Apr 22. Grg 757 Apr 26. Venus: -42. 8.17		
9.16.6.9.17, 6 Kaban 20 Mak Moon 0.5 (Ecl.?) Jul 757 Oct 17. Grg 757 Oct 21. Venus: +136. 8.17		Oct 17 solar 10% at 17:13
9.16.7.0.15, 2 Men 13 Zotz Moon 0.3 (Ecl.?) Jul 758 Apr 13. Grg 758 Apr 17. Venus: -270. -8.17		Mar 29 lunar 15%U at 8:20 Apr 12 solar at 58% at 7:29
9.16.6.9.17, 6 Kaban 0 K'ank'in Moon 0.0 (Ecl.?) Jul 757 Oct 17. Grg 757 Oct 21. Venus: +136. 8.17		
9.16.7.0.15, 2 Men 13 Zotz Moon 0.8 (Ecl.?) Jul 758 Apr 13. Grg 758 Apr 17. Venus: -270. 8.17		
9.16.7.9.12, 10 Eb 10 Mak Moon 0.6 (Ecl.?) Jul 758 Oct 7. Grg 758 Oct 11. Venus: -93. 8.17		Sep 11 lunar 18%U at 15:46
9.16.8.0.9, 5 Muluk 2 Zotz Moon 0.4 (Ecl.?) Jul 759 Apr 2. Grg 759 Apr 6. Venus: +84. 8.17		
9.16.8.9.6, 13 Kimi 19 Keh Moon 0.2 (Ecl.?) Jul 759 Sep 26. Grg 759 Sep 30. Venus: +261. 7.8		
9.16.8.16.14, 5 Ix 2 Wo Moon 0.6 (Ecl.?) Jul 760 Feb 21. Grg 760 Feb 25. Venus: -175. 8.17		
9.16.9.7.11, 13 Chuwen 19 Yax Moon 0.4 (Ecl.?) Jul 760 Aug 16. Grg 760 Aug 20. Venus: +2. 8.17	54-4a	
9.16.9.16.8, 8 Lamat 11 Pop Moon 0.2 (Ecl.?) Jul 761 Feb 9. Grg 761 Feb 13. Venus: +179. 8.17	54-5a	
9.16.10.7.5, 3 Chikchan 8 Yax Moon 0.08d; (Ecl.?)		

Jul 761 Aug 5. Grg 761 Aug 9. Venus: -228. 8.17		
9.16.10.16.2, 11 Ik' 0 Pop Moon 29.4 (Ecl.?) Jul 762 Jan 29. Grg 762 Feb 2. Venus: -51. 8.17		
9.16.11.6.19, 6 Kawak 17 Ch'en Moon 29.2 (Ecl.?) Jul 762 Jul 25. Grg 762 Jul 29. Venus: +126. 8.17		
9.16.11.15.16, 1 Kib 14 Kumk'u Moon 29.0 (Ecl.?) Jul 763 Jan 18. Grg 763 Jan 22. Venus: -281. 8.17		
9.16.12.6.13, 9 Ben 6 Ch'en Moon 28.8 (Ecl.?) Jul 763 Jul 14. Grg 763 Jul 18. Venus: -104. 7.8		June 29 lunar total @ 20:29
9.16.12.14.1, 1 Imix 14 Pax Moon 29.2 (Ecl.?) Jul 763 Dec 9. Grg 763 Dec 13. Venus: +44. 8.17	55-4a	Dec 24 Lunar 81% @ 22:31
9.16.13.4.18, 9 Etz'nab 6 Yaxk'in Moon 29.0 (Ecl.?) Jul 764 Jun 3. Grg 764 Jun 7. Venus: +221. 8.17	55-5a	Jun 484% solar @ Jun 18 5% U @ 4:41
9.16.13.13.15, 4 Men 3 Pax Moon 28.8 (Ecl.?) Jul 764 Nov 27. Grg 764 Dec 1. Venus: -186. 8.17		Nov. 27 64% solar @ 22:64
9.16.14.4.12, 12 Eb 15 Xul Moon 28.6 (Ecl.?) Jul 765 May 23. Grg 765 May 27. Venus: -9. 8.17		May 6 95% Lunar P at 16:32 Jun 7 19% Lunar P @ 23:10
9.16.14.13.10, 8 Ok 13 Muwan Moon 29.4 (Ecl.?) Jul 765 Nov 17. Grg 765 Nov 21. Venus: +170. 8.17		Nov. 2 Lunar 95% P at 5:06 Nov. 17 solar 69% at 14:26 Dec 13 lunar 55% @ 2:53 Apr 59 Lunar total @ 5:34
9.16.15.4.7, 3 Manik' 5 Xul Moon 29. (Ecl.?) Jul 766 May 13. Grg 766 May 17. Venus: -237. 8.17		
9.16.15.13.4, 11 Kan 2 Muwan Moon 29.1 (Ecl.?) Jul 766 Nov 6. Grg 766 Nov 10. Venus: -60. 7.8		
9.16.16.2.12, 3 Eb 5 Zotz Moon 29.4 (Ecl.?) Jul 767 Apr 3. Grg 767 Apr 7. Venus: +88. 8.17	57-2a	Apr. 3 Solar 32% @ 6:14 Apr 18 Lunar Total @ 18:24
9.16.16.11.9, 11 Muluk 2 Mak Moon 29.2 (Ecl.?) Jul 767 Sep 27. Grg 767 Oct 1. Venus: +265. 8.17	57-3a	Oct 12 lunar Total @ 20:50
9.16.17.2.6, 6 Kimi 14 Zip Moon 29. (Ecl.?) Jul 768 Mar 22. Grg 768 Mar 26. Venus: -142. 8.17		Apr 6 Lunar 66% P @ 21:17
9.16.17.11.3, 1 Ak'bal 11 Keh Moon 28.9 (Ecl.?) Jul 768 Sep 15. Grg 768 Sep 19. Venus: +35. 8.17		Sep 1, 780 Lunar P 4% Sep 30 Lunar P 92% at 16:49
9.16.18.2.0, 9 Ahaw 3 Zip Moon 28.7 (Ecl.?) Jul 769 Mar 11. Grg 769 Mar 15. Venus: +212. 8.17		Feb 29 lunar P at 3:49
9.16.18.10.17, 4 Kaban 0 Keh Moon 28.5 (Ecl.?) Jul 769 Sep 4. Grg 769 Sep 8. Venus: -195. 8.17		Aug 21 lunar P at 20:54 Sep 5 Solar 74% at 19:46
9.16.19.1.15, 13 Men 13 Wo Moon 29.3 (Ecl.?)		Feb. 14 lunar total

Chart of the Eclipse Table in the Dresden Codex

Jul 770 Mar 1. Grg 770 Mar 5. Venus: -17. 7.8		
9.16.19.9.3, 5 Ak'bal 1 Yax Moon 0.1 (Ecl.?) Jul 770 Jul 27. Grg 770 Jul 31. Venus: +131. 1.9	51-1b	Aug. 11 lunar total at 3:13
9.16.19.10.12, 8 Eb 10 Sak Moon 29.1 (Ecl.?) Jul 770 Aug 25. Grg 770 Aug 29. Venus: +160. 7.8		
9.17.0.0.0 13 Ahaw 18 Kumk'u. Moon 29.18d (Ecl.?) Jul 771 Jan 20. Grg 771 Jan 24. Venus: -276. 8.17	51-2b	Jan 20 solar at 4% at 15:34 Feb. 4 lunar total at 4:45
9.17.0.8.17, 8 Kaban 10 Ch'en Moon 29.3 (Ecl.?) Jul 771 Jul 16. Grg 771 Jul 20. Venus: -99. 8.17	51-3b	Aug. 31 lunar 72% U at 3:59
9.17.0.17.14, 3 Ix 7 Kumk'u Moon 29.1 (Ecl.?) Jul 772 Jan 9. Grg 772 Jan 13. Venus: +78. 8.17	51-4b	Dec 26 lunar 10% at 8:41 Jan 9 Solar 53% at 15:29 Jan 24 lunar P at 6% 20:42 Jun 19 lunar P 34% at 16:47 Jul 5 Solar 33% at 4:50 Jul 19 lunar P 47% at 6:04 Dec 14 lunar U 18% at 19:11
9.17.1.8.11, 11 Chuwen 19 Mol Moon 28.9 (Ecl.?) Jul 772 Jul 4. Grg 772 Jul 8. Venus: +255. 8.17	51-5b	
9.17.1.17.8, 6 Lamat 16 K'ayab Moon 28. (Ecl.?) Jul 772 Dec 28. Grg 773 Jan 1. Venus: -152. 8.17		
9.17.2.8.5, 1 Chikchan 8 Mol Moon 28.6 (Ecl.?) Jul 773 Jun 23. Grg 773 Jun 27. Venus: +25. 8.17		Jun 9, 673 lunar 83% U at 6:45
9.17.2.17.3, 10 Ak'bal 6 K'ayab Moon 29.4 (Ecl.?) Jul 773 Dec 18. Grg 773 Dec 22. Venus: +203. 7.8		Dec. 3 lunar total at 21:33
9.17.3.6.11, 2 Chuwen 9 Xul Moon 0.2 (Ecl.?) Jul 774 May 15. Grg 774 May 19. Venus: -233. 8.17	52-3b	May 29 lunar total at 23:36
9.17.3.15.8, 10 Lamat 6 Muwan Moon 0.0 (Ecl.?) Jul 774 Nov 8. Grg 774 Nov 12. Venus: -56. 8.17	52-4b	Nov 8 solar 36% at 12:27 Biv 22 lunar total at 20:33
9.17.4.6.5, 5 Chikchan 18 Tzec Moon 29.41d; (Ecl.?) Jul 775 May 4. Grg 775 May 8. Venus: +121. 8.17	52-5b	May 19 lunar P at 16:04
9.17.4.15.2, 13 Ik' 15 K'ank'in Moon 29.2 (Ecl.?) Jul 775 Oct 28. Grg 775 Nov 1. Venus: -286. 8.17		Oct. 28 solar 68% Nov 11 lunar P 88% at 23:50
9.17.5.5.19, 8 Kawak 7 Tzec Moon 29.0 (Ecl.?) Jul 776 Apr 22. Grg 776 Apr 26. Venus: -109. 8.17		Apr 4 lunar P ends at 17:40 Apr 22 solar 8% at 17:56
9.17.5.14.16, 3 Kib 4 K'ank'in Moon 28.8 (Ecl.?) Jul 776 Oct 16. Grg 776 Oct 20. Venus: +68. 8.17		Oct 2 lunar P at 00:05 Oct 17 solar at 52% at 3:16
9.17.6.5.13, 11 Ben 16 Zotz Moon 28.6 (Ecl.?) Jul 777 Apr 11. Grg 777 Apr 15. Venus: +245. 8.17		Mar 28 lunar total at 16:38 Apr 12 solar 37% at 6:12
9.17.6.14.11, 7 Chuwen 14 Mak Moon 29.4 (Ecl.?) Jul 777 Oct 6. Grg 777 Oct 10. Venus: -161. 7.8		Sep 21 lunar total at 16:21
9.17.7.3.19, 12 Kawak 17 Wo Moon 0.3 (Ecl.?)		Mar 17 lunar total at 17:28

Jul 778 Mar 3. Grg 778 Mar 7. Venus: -13. 8.17		
9.17.7.12.16, 7 Kib 14 Sak Moon 0.1 (Ecl.?) Jul 778 Aug 27. Grg 778 Aug 31. Venus: +164. 8.17	54-3b	Aug 26 solar 56% at 18:30 Sep 11 lunar total at 6:20
9.17.8.3.13, 2 Ben 6 Wo Moon 29.4 (Ecl.?) Jul 779 Feb 20. Grg 779 Feb 24. Venus: -243. 8.17		Feb 5 lunar P 8% at 13:01 Mar 7 lunar P 74% at 00:20
9.17.8.12.10, 10 Ok 3 Sak Moon 29.2 (Ecl.?) Jul 779 Aug 16. Grg 779 Aug 20. Venus: -66. 8.17		
9.17.9.3.7, 5 Manik' 15 Pop Moon 29. (Ecl.?) Jul 780 Feb 9. Grg 780 Feb 13. Venus: +111. 8.17		Jan 26 lunar p at 4:07
9.17.9.12.4, 13 Kan 12 Yax Moon 28.9 (Ecl.?) Jul 780 Aug 4. Grg 780 Aug 8. Venus: +288. 8.17		Jul 20 lunar P at 23:37
9.17.10.3.1, 8 Imix 4 Pop Moon 28.7 (Ecl.?) Jul 781 Jan 28. Grg 781 Feb 1. Venus: -119. 8.17		Jan 14 lunar total at 19:39
9.17.10.11.19, 4 Kawak 2 Yax Moon 0.0 (Ecl.?) Jul 781 Jul 25. Grg 781 Jul 29. Venus: +59. 7.8		Jul 10 lunar total at 3:21
9.17.11.1.7, 9 Manik' 10 K'ayab Moon 0.3 (Ecl.?) Jul 781 Dec 20. Grg 781 Dec 24. Venus: +207. 8.17	55-5b	Jan 4 lunar total at 6:59
9.17.11.10.4, 4 Kan 2 Mol Moon 0.1 (Ecl.?) Jul 782 Jun 15. Grg 782 Jun 19. Venus: -200. 8.17	55-6b	Jun 29 lunar P at 14:21
9.17.12.1.1, 12 Imix 19 Pax Moon 0 (Ecl.?) Jul 782 Dec 9. Grg 782 Dec 13. Venus: -23. 8.17	55-7b	Dec 9 solar 18% at 4:51
9.17.12.9.18, 7 Etz'nab 11 Yaxk'in Moon 29.35d; (Ecl.?) Jul 783 Jun 4. Grg 783 Jun 8. Venus: +154. 8.17		May 21 lunar P at 00:02 Jun 4 solar 62% at 15:21 Jun 19 lunar P 32% at 6:36 Nov 13 lunar P 97% at 15:29
9.17.13.0.15, 2 Men 8 Pax Moon 29.1 (Ecl.?) Jul 783 Nov 28. Grg 783 Dec 2. Venus: -253. 8.17		
9.17.13.9.12, 10 Eb 0 Yaxk'in Moon 28.9 (Ecl.?) Jul 784 May 23. Grg 784 May 27. Venus: -76. 8.17		May 9 lunar total at 15:38
9.17.14.0.9, 5 Muluk 17 Muwan Moon 28. (Ecl.?) Jul 784 Nov 16. Grg 784 Nov 20. Venus: +101. 7.8		Nov 1 lunar total at 20:54
9.17.14.7.17, 10 Kaban 0 Tzec Moon 29.1 (Ecl.?) Jul 785 Apr 13. Grg 785 Apr 17. Venus: +249. 8.17	56-4b	Mar 29 lunar total at 01:23
9.17.14.16.14, 5 Ix 17 Mak Moon 28.9 (Ecl.?) Jul 785 Oct 7. Grg 785 Oct 11. Venus: -158. 8.17	57-1b	Oct 22 lunar total at 9:21
9.17.15.7.11, 13 Chuwen 9 Zotz Moon 28.7 (Ecl.?) Jul 786 Apr 2. Grg 786 Apr 6. Venus: +20. 8.17	57-2b	Mar 18 lunar P at 4:02
9.17.15.16.8, 8 Lamat 6 Mak Moon 28. (Ecl.?)		Oct 12 lunar P 96% at 1:16

Jul 786 Sep 26. Grg 786 Sep 30. Venus: +197.
 8.17
 9.17.16.7.6, 4 Kimi 19 Zip Moon 29.4 (Ecl.?)
 Jul 787 Mar 23. Grg 787 Mar 27. Venus: -209.
 8.17
 9.17.16.16.3, 12 Ak'bal 16 Keh Moon 29.2 (Ecl.?)
 Jul 787 Sep 16. Grg 787 Sep 20. Venus: -32.
 8.17
 9.17.17.7.0, 7 Ahaw 8 Zip Moon 29.0 (Ecl.?)
 Jul 788 Mar 11. Grg 788 Mar 15. Venus: +145.
 8.17
 9.17.17.15.17, 2 Kaban 5 Keh Moon 28.8 (Ecl.?)
 Jul 788 Sep 4. Grg 788 Sep 8. Venus: -262.
 7.8
 9.17.18.5.5, 7 Chikchan 8 Pop Moon 29.2 (Ecl.?)
 Jul 789 Jan 30. Grg 789 Feb 3. Venus: -114.
 8.17
 9.17.18.14.2, 2 Ik' 5 Yax Moon 29.0 (Ecl.?)
 Jul 789 Jul 26. Grg 789 Jul 30. Venus: +63.
 8.17
 9.17.19.4.19, 10 Kawak 2 Wayeb Moon 28.8 (Ecl.?)
 Jul 790 Jan 19. Grg 790 Jan 23. Venus: +240.

Mar 8 lunar P ends 16:16

Sep 2 lunar P at 4:27

Feb 25 lunar total at 22:39

Aug 21 lunar total at 7:07

Jan 5 lunar P 8% at 18:10

Feb 4 lunar P 92% at 5:16

Eclipse stations using Lounsbury's program	Dresden hits	actual eclipses
10.11.3.10.8, 12 Lamat 6 Mak Moon 0.76d; (Ecl.?) Jul 1050 Jul 22. Grg 1050 Jul 28 Venus: +210. 8.17	52-a	Aug 5 lunar U 27% at 8:55
10.11.4.1.5, 7 Chikchan 18 Sip Moon 0.58d; (Ecl.?) Jul 1051 Jan 15. Grg 1051 Jan 21 Venus: -197. 8.17	53-1a	Dec 30 lunar P 50% at 18:13 Jan 15 solar 25% at 3:57
10.11.4.10.2, 2 Ik' 15 Keh Moon 0.39d; (Ecl.?) Jul 1051 Jul 11. Grg 1051 Jul 17 Venus: -20. 8.17	53-2a	Jun 26 lunar U 11% at 15:03
10.11.5.0.19, 10 Kawak 7 Sip Moon 0.21d; (Ecl.?) Jul 1052 Jan 4. Grg 1052 Jan 10 Venus: +157. 8.17		Dec 20 lunar U 52% at 2:32
10.11.5.9.16, 5 Kib 4 Keh Moon 0.02d; (Ecl.?) Jul 1052 Jun 29. Grg 1052 Jul 5 Venus: -250. 7.8		Jun 14 lunar total at 21:36
10.11.5.17.4, 10 Kan 7 Pop Moon 0.37d; (Ecl.?) Jul 1052 Nov 24. Grg 1052 Nov 30 Venus: -102. 8.17	53-5a	Dec 8 lunar total at 16:29
10.11.6.8.1, 5 Imix 4 Yax Moon 0.19d; (Ecl.?) Jul 1053 May 20. Grg 1053 May 26 Venus: +75. 8.17	53-6a	Jun 2 lunar U 80% at 22:37
10.11.6.16.18, 13 Etz'nab 1 Wayeb Moon 00d; (Ecl.?) Jul 1053 Nov 13. Grg 1053 Nov 19 Venus: +252. 8.17	54-1a	Nov 28 lunar U 43% at 8:15
10.11.7.7.15, 8 Men 13 Ch'en Moon 29.35d; (Ecl.?) Jul 1054 May 9. Grg 1054 May 15 Venus: -155. 8.17	54-2a	May 24 lunar P 52% at 1:01
10.11.7.16.12, 3 Eb 10 Kumk'u Moon 29.17d; (Ecl.?) Jul 1054 Nov 2. Grg 1054 Nov 8 Venus: +22. 8.17	54-3a	Oct 19 lunar 48% P at 6:11 Nov. 2 solar 74% at 4:35 Nov 17 lunar 11%P at 20:38
10.11.8.7.9, 11 Muluk 2 Ch'en Moon 28.98d; (Ecl.?) Jul 1055 Apr 28. Grg 1055 May 4 Venus: +199. 8.17	54-4a	Apr 14 lunar 74%U at 1:34 Apr 29 solar 11% at 9:12
10.11.8.16.6, 6 Kimi 19 K'ayab Moon 28.8d; (Ecl.?) Jul 1055 Oct 22. Grg 1055 Oct 28 Venus: -208. 8.17	54-5a DN cor	Oct 8 lunar 61% U at 8:27
10.11.9.7.3, 1 Ak'bal 11 Mol Moon 28.61d; (Ecl.?) Jul 1056 Apr 16. Grg 1056 Apr 22 Venus: -31. 7.8	54-6a	Apr 2 lunar total at 8:05
10.11.9.14.11, 6 Chuen 19 Muwan Moon 28.96d; (Ecl.?) Jul 1056 Sep 11. Grg 1056 Sep 17 Venus: +117. 8.17	54-7a	Sep 26 lunar total 8:05
10.11.10.5.8, 1 Lamat 11 Xul Moon 28.78d; (Ecl.?) Jul 1057 Mar 7. Grg 1057 Mar 13 Venus: -290. 8.17	55-1a+1	Mar 23 lunar 33% U at 9:56
10.11.10.14.5, 9 Chicchan 8 Muwan Moon 28.59d; (Ecl.?) Jul 1057 Aug 31. Grg 1057 Sep 6 Venus: -113. 8.17	55-2a+1	
10.11.11.5.3, 5 Ak'bal 1 Xul Moon 29.42d; (Ecl.?) Jul 1058 Feb 25. Grg 1058 Mar 3 Venus: +65. 8.17	55-3a	Feb 11 lunar 59%P at 5:59

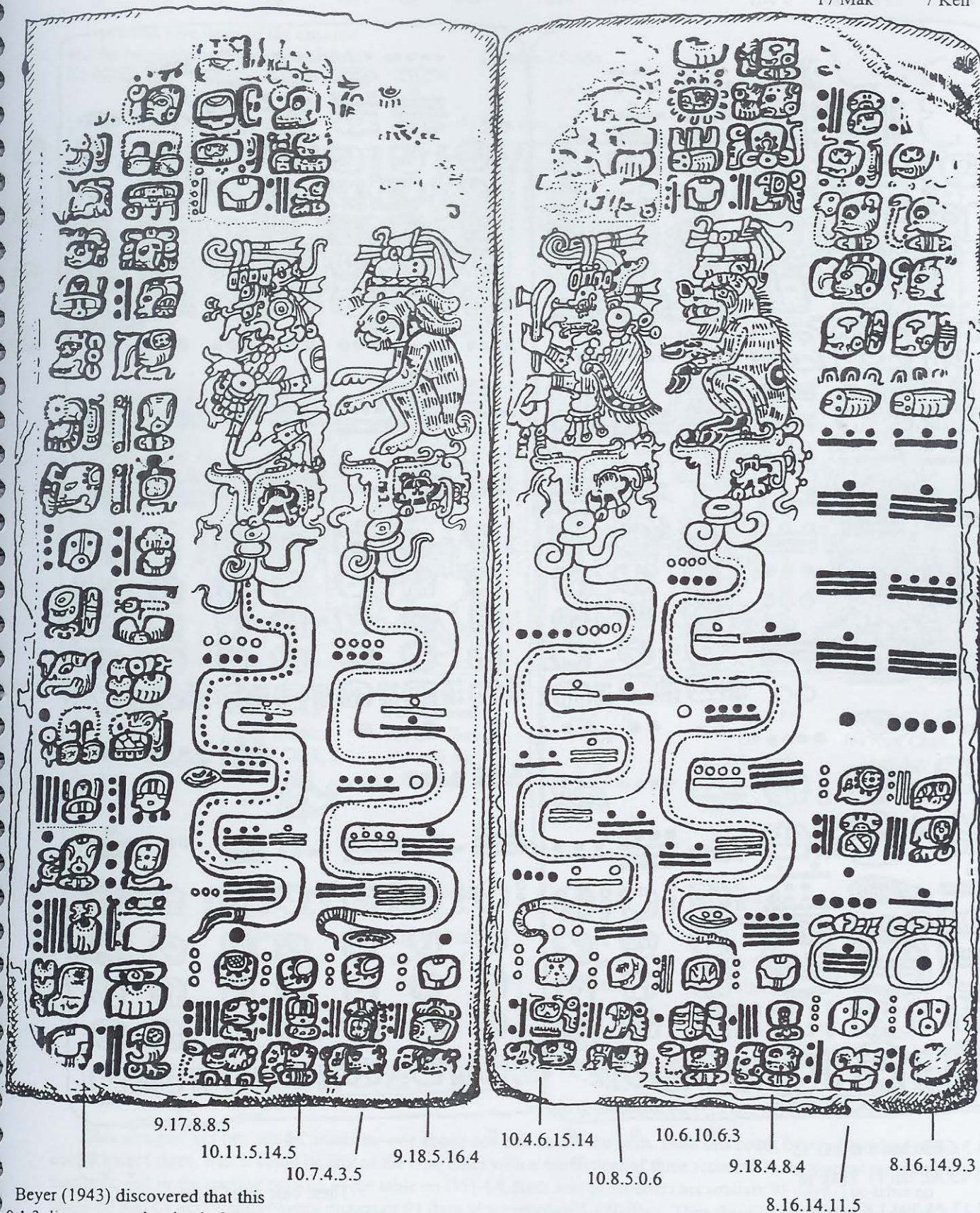
10.11.11.14.0, 13 Ahaw 18 K'ank'in Moon 29.23d; (Ecl.?) Jul 1058 Aug 21. Grg 1058 Aug 27 Venus: +242. 8.17	55-4a	Aug 6 lunar 78%P at 16:03 Sep 5 lunar 23%P at 00:22
10.11.12.4.17, 8 Kaban 10 Tzec Moon 29.05d; (Ecl.?) Jul 1059 Feb 14. Grg 1059 Feb 20 Venus: -165. 8.17	55-5a	Jan 31 lunar 82%U 6:19
10.11.12.13.14, 3 Ix 7 K'ank'in Moon 28.86d; (Ecl.?) Jul 1059 Aug 10. Grg 1059 Aug 16 Venus: +12. 8.17		Jul 27 lunar total at 9:03
10.11.13.4.11, 11 Chuwen 19 Zotz Moon 28.68d; (Ecl.?) Jul 1060 Feb 3. Grg 1060 Feb 9 Venus: +189. 7.8		Jan 20 lunar total at 6:38
10.11.13.11.19, 3 Kawak 7 Keh Moon 29.03d; (Ecl.?) Jul 1060 Jun 30. Grg 1060 Jul 6 Venus: -247. 8.17	56-2a	Jul 15 lunar total at 23:31
10.11.14.2.16, 11 Kib 19 Wo Moon 28.84d; (Ecl.?) Jul 1060 Dec 24. Grg 1060 Dec 30 Venus: -70. 8.17	56-3a	
10.11.14.11.13, 6 Ben 16 Sak Moon 28.66d; (Ecl.?) Jul 1061 Jun 19. Grg 1061 Jun 25 Venus: +107. 8.17	57-1a+1	Jul 5 lunar 78%P at 7:34
10.11.15.2.11, 2 Chuwen 9 Wo Moon 29.47d; (Ecl.?) Jul 1061 Dec 14. Grg 1061 Dec 20 Venus: +285. 8.17	57-2a	Nov 29 lunar 64%P at 15:48 Dec 14 solar 50% at 15:34 Dec 29 lunar 19%P at 02:29
10.11.15.11.8, 10 Lamat 6 Sak Moon 29.29d; (Ecl.?) Jul 1062 Jun 9. Grg 1062 Jun 15 Venus: -122. 8.17	57-3a	May 25 lunar 17%U at 18:27
10.11.16.2.5, 5 Chikchan 18 Pop Moon 29.11d; (Ecl.?) Jul 1062 Dec 3. Grg 1062 Dec 9 Venus: +55. 8.17		Nov 19 lunar 81%U at 6:59 Dec 3 solar 54% at 15:54
10.11.16.11.2, 13 Ik' 15 Yax Moon 28.92d; (Ecl.?) Jul 1063 May 29. Grg 1063 Jun 4 Venus: +232. 7.8		May 14 lunar total at 22:26
10.11.17.0.10, 5 Ok 3 Kumk'u Moon 29.27d; (Ecl.?) Jul 1063 Oct 24. Grg 1063 Oct 30 Venus: -204. 8.17	58-2a	Nov 8 lunar total at 17:54
10.11.17.9.7, 13 Manik' 15 Mol Moon 29.09d; (Ecl.?) Jul 1064 Apr 18. Grg 1064 Apr 24 Venus: -27. 8.17	58-3a+1	Apr 19 solar at 80% at 05:28 May 3 lunar 69%U at 9:31
10.11.18.0.4, 8 Kan 12 K'ayab Moon 28.9d; (Ecl.?) Jul 1064 Oct 12. Grg 1064 Oct 18 Venus: +150. 8.17	58-4a+1	Oct 27 lunar 27% U at 21:18
10.11.18.9.1, 3 Imix 4 Mol Moon 28.72d; (Ecl.?) Jul 1065 Apr 7. Grg 1065 Apr 13 Venus: -257. 8.17	51-1b+1	Mar 24 lunar 67%P at 17:59 Apr 23 lunar 39%P at 01:38
10.11.18.17.18, 11 Etz'nab 1 K'ayab Moon 28.54d; (Ecl.?) Jul 1065 Oct 1. Grg 1065 Oct 7 Venus: -80. 8.17	51-2b+1	Oct 2 solar 71% at 9:43 Oct 16 lunar 13%P at 20:38
10.11.19.8.16, 7 Kib 14 Yaxk'in Moon 29.35d; (Ecl.?) Jul 1066 Mar 28. Grg 1066 Apr 3 Venus: +99. 8.17	51-3b	Mar 14 lunar 92% U at 8:50
10.11.19.17.13, 2 Ben 11 Pax Moon 29.17d; (Ecl.?) Jul 1066 Sep 21. Grg 1066 Sep 27 Venus: +276. 8.17	51-4b	Sep 6 lunar 69% U at 10:21

10.12.0.8.10, 10 Ok 3 Yaxk'in Moon 28.99d; (Ecl.?) Jul 1067 Mar 17. Grg 1067 Mar 23 Venus: -131. 7.8	51-5b	Mar 3 lunar total at 17:58
10.12.0.15.18, 2 Etz'nab 11 K'ank'in Moon 29.34d; (Ecl.?) Jul 1067 Aug 12. Grg 1067 Aug 18 Venus: +17. 8.17	51-6b	Aug 26 lunar total at 23:55
10.12.1.6.15, 10 Men 3 Tzec Moon 29.15d; (Ecl.?) Jul 1068 Feb 5. Grg 1068 Feb 11 Venus: +194. 8.17	52-1b+1	Feb 20 lunar 6%U at 19:16
10.12.1.15.12, 5 Eb 0 K'ank'in Moon 28.97d; (Ecl.?) Jul 1068 Jul 31. Grg 1068 Aug 6 Venus: -213. 8.17	52-2b+1	Aug 15 lunar 38%U at 16:39
10.12.2.6.9, 13 Muluk 12 Zotz Moon 28.78d; (Ecl.?) Jul 1069 Jan 24. Grg 1069 Jan 30 Venus: -36. 8.17	52-3b+1	Jan 10 lunar 50%P at 02:29 Jan 25 lunar at 3%U at 15:51
10.12.2.15.6, 8 Kimi 9 Mak Moon 28.6d; (Ecl.?) Jul 1069 Jul 20. Grg 1069 Jul 26 Venus: +141. 8.17	52-4b+1	Jul 6 lunar 99%P at 22:06
10.12.3.6.4, 4 Kan 2 Zotz Moon 29.42d; (Ecl.?) Jul 1070 Jan 14. Grg 1070 Jan 20 Venus: -265. 8.17	53-1b+1	
10.12.3.15.1, 12 Imix 19 Keh Moon 29.23d; (Ecl.?) Jul 1070 Jul 10. Grg 1070 Jul 16 Venus: -88. 8.17		Jun 26 lunar total at 4:08
10.12.4.5.18, 7 Etz'nab 11 Sip Moon 29.05d; (Ecl.?) Jul 1071 Jan 3. Grg 1071 Jan 9 Venus: +89. 7.8		Dec 20 lunar total at 10:27
10.12.4.13.6, 12 Kimi 19 Yax Moon 29.39d; (Ecl.?) Jul 1071 May 31. Grg 1071 Jun 6 Venus: +237. 8.17	53-4b	Jun 15 lunar 96%U at 5:00
10.12.5.4.3, 7 Ak'bal 11 Pop Moon 29.21d; (Ecl.?) Jul 1071 Nov 24. Grg 1071 Nov 30 Venus: -170. 8.17	53-5b	Dec 9 lunar 43% U at 17:04
10.12.5.13.0, 2 Ahaw 8 Yax Moon 29.03d; (Ecl.?) Jul 1072 May 19. Grg 1072 May 25 Venus: +7. 8.17	54-1b	May 4 lunar 16%p at 20:21 May 20 solar 12% at 7:36 Jun 3 lunar 75%P at 7:45
10.12.6.3.17, 10 Kaban 0 Pop Moon 28.85d; (Ecl.?) Jul 1072 Nov 12. Grg 1072 Nov 18 Venus: +184. 8.17	54-2b	Nov 28 lunar 11% P at 5:09
10.12.6.12.14, 5 Ix 17 Ch'en Moon 28.67d; (Ecl.?) Jul 1073 May 8. Grg 1073 May 14 Venus: -223. 8.17	54-3b	Apr 24 lunar 63%U at 9:10
10.12.7.3.12, 1 Eb 15 Kumk'u Moon 29.48d; (Ecl.?) Jul 1073 Nov 2. Grg 1073 Nov 8 Venus: -45. 8.17		Oct 18 lunar 50%U at 16:04
10.12.7.12.9, 9 Muluk 7 Ch'en Moon 29.29d; (Ecl.?) Jul 1074 Apr 28. Grg 1074 May 4 Venus: +132. 7.8		Apr 14 lunar total at 1:50
10.12.8.1.17, 1 Kaban 15 Pax Moon 0.11d; (Ecl.?) Jul 1074 Sep 23. Grg 1074 Sep 29 Venus: +280. 8.17	55-1b	Oct 7 lunar total at 15:39
10.12.8.10.14, 9 Ix 7 Yaxk'in Moon 29.46d; (Ecl.?) Jul 1075 Mar 19. Grg 1075 Mar 25 Venus: -127. 8.17	55-2b	Apr 3 lunar 42%U at 17:43

10.12.9.1.11, 4 Chuwen 4 Pax Moon 29.28d; (Ecl.?) Jul 1075 Sep 12. Grg 1075 Sep 18 Venus: +50. 8.17	55-3b	Sep 26 lunar 51%U at 20:21
10.12.9.10.8, 12 Lamat 16 Xul Moon 29.09d; (Ecl.?) Jul 1076 Mar 7. Grg 1076 Mar 13 Venus: +227. 8.17	55-4b	Feb 22 lunar 63%P at 13:50 Mar 7 solar 35% at 18:12
10.12.10.1.5, 7 Chikchan 13 Muwan Moon 28.91d; (Ecl.?) Jul 1076 Aug 31. Grg 1076 Sep 6 Venus: -180. 8.17	55-4b	Aug 16 lunar 68%P at 23:48
10.12.10.10.2, 2 Ik' 5 Xul Moon 28.72d; (Ecl.?) Jul 1077 Feb 24. Grg 1077 Mar 2 Venus: -3. 8.17	55-5b	Feb 25 86% solar at 6:29
10.12.11.0.19, 10 Kawak 2 Muwan Moon 28.54d; (Ecl.?) Jul 1077 Aug 20. Grg 1077 Aug 26 Venus: +174. 8.17	55-6b	Aug 6 lunar total at 16:41
10.12.11.9.17, 6 Kaban 15 Tzec Moon 29.36d; (Ecl.?) Jul 1078 Feb 14. Grg 1078 Feb 20 Venus: -232. 7.8	55-7b	Jan 30 lunar total 16:41
10.12.11.17.5, 11 Chikchan 3 Mak Moon 0.17d; (Ecl.?) Jul 1078 Jul 12. Grg 1078 Jul 18 Venus: -84. 8.17	56-1b	Jul 11 solar 11% at 19:36 Jul 27 lunar total at 6:45
10.12.12.8.2, 6 Ik' 15 Sip Moon 29.52d; (Ecl.?) Jul 1079 Jan 5. Grg 1079 Jan 11 Venus: +93. 8.17	56-2b	Jan 19 lunar 33% U at 21:48
10.12.12.16.19, 1 Kawak 12 Keh Moon 29.34d; (Ecl.?) Jul 1079 Jul 1. Grg 1079 Jul 7 Venus: +270. 8.17	56-3b	Jul 1 solar 52% at 5:52
10.12.13.7.16, 9 Kib 4 Sip Moon 29.16d; (Ecl.?) Jul 1079 Dec 25. Grg 1079 Dec 31 Venus: -137. 8.17	56-4b	Dec 11 lunar 64% P at 00:41
10.12.13.16.13, 4 Ben 1 Keh Moon 28.97d; (Ecl.?) Jul 1080 Jun 19. Grg 1080 Jun 25 Venus: +40. 8.17	57-1b	Jun 5 lunar 2% U at 00:54
10.12.14.7.10, 12 Ok 13 Wo Moon 28.79d; (Ecl.?) Jul 1080 Dec 13. Grg 1080 Dec 19 Venus: +217. 8.17	57-2b	Nov 29 lunar 80%U at 15:43
10.12.14.16.7, 7 Manik' 10 Sak Moon 28.6d; (Ecl.?) Jul 1081 Jun 8. Grg 1081 Jun 14 Venus: -190. 7.8		May 25 lunar total at 5:18
10.12.15.5.15, 12 Men 18 Kumk'u Moon 28.95d; (Ecl.?) Jul 1081 Nov 3. Grg 1081 Nov 9 Venus: -42. 8.17	57-4b	Nov 19 lunar total at 2:04
10.12.15.14.12, 7 Eb 10 Ch'en Moon 28.77d; (Ecl.?) Jul 1082 Apr 29. Grg 1082 May 5 Venus: +135. 8.17	57-5b	May 14 lunar 82%U at 5:11
10.12.16.5.9, 2 Muluk 7 Kumk'u Moon 28.59d; (Ecl.?) Jul 1082 Oct 23. Grg 1082 Oct 29 Venus: -272. 8.17	58-1b	Nov 8 lunar 29%U at 16:54
10.12.16.14.7, 11 Manik' 0 Ch'en Moon 29.4d; (Ecl.?) Jul 1083 Apr 19. Grg 1083 Apr 25 Venus: -94.	58-2b	Apr 5 lunr 58%P at 1:54

10.12.16.14.8, 12 Lamat 1 Ch'en Moon 0.87d; (Ecl.?)	52-2a	Apr 19 solar 96% at 16:48
Jul 1083 Apr 20. Grg 1083 Apr 26 Venus: -93.		
8.17		
10.12.17.5.5, 7 Chikchan 18 K'ayab Moon 0.68d; (Ecl.?)	53-1a	Oct 28 lunar 17% 04:22
Jul 1083 Oct 14. Grg 1083 Oct 20 Venus: +84.		
8.17		
10.12.17.14.2, 2 Ik' 10 Mol Moon 0.5d; (Ecl.?)	53-2a	Mar 24 lunar 84%U at 16:40
Jul 1084 Apr 8. Grg 1084 Apr 14 Venus: +261.		
8.17		
10.12.18.4.19, 10 Kawak 7 K'ayab Moon 0.32d; (Ecl.?)		
Jul 1084 Oct 2. Grg 1084 Oct 8 Venus: -146.		
8.17		
10.12.18.13.16, 5 Kib 19 Yaxk'in Moon 0.14d; (Ecl.?)		Mar 14 lunar total at 01:09
Jul 1085 Mar 28. Grg 1085 Apr 3 Venus: +32.		
7.8		
10.12.19.3.4, 10 Kan 7 Muwan Moon 0.48d; (Ecl.?)	53-5a	Sep 6 lunar total at 7:55
Jul 1085 Aug 23. Grg 1085 Aug 29 Venus: +180.		
8.17		
10.12.19.12.1, 5 Imix 19 Tzec Moon 0.3d; (Ecl.?)	53-6a	Feb 16 solar total at 6:22
Jul 1086 Feb 16. Grg 1086 Feb 22 Venus: -227.		Mar 3 lunar 13%U at 2:39
8.17		
10.13.0.2.18, 13 Etz'nab 16 K'ank'in Moon 0.12d; (Ecl.?)	54-1a	Aug 27 lunar 47%U at 00:31
Jul 1086 Aug 12. Grg 1086 Aug 18 Venus: -50.		
8.17		
10.13.0.11.15, 8 Men 8 Tzec Moon 29.46d; (Ecl.?)	54-2a	
Jul 1087 Feb 5. Grg 1087 Feb 11 Venus: +127.		
8.17		
10.13.1.2.12, 3 Eb 5 K'ank'in Moon 29.28d; (Ecl.?)	54-3a	Jul 18 lunar 85%P at 5:08
Jul 1087 Aug 1. Grg 1087 Aug 7 Venus: -280.		
8.17		
10.13.1.11.9, 11 Muluk 17 Zotz Moon 29.1d; (Ecl.?)	54-4a	Jan 10 lunar 81%U at 17:51
Jul 1088 Jan 25. Grg 1088 Jan 31 Venus: -103.		
8.17		
10.13.2.2.6, 6 Kimi 14 Mak Moon 28.91d; (Ecl.?)	54-5a	
Jul 1088 Jul 20. Grg 1088 Jul 26 Venus: +74.	dn cor	
8.17		
10.13.2.11.3, 1 Ak'bal 6 Zotz Moon 28.73d; (Ecl.?)	54-6a	Dec 20 lunar 43% at 01:55
Jul 1089 Jan 13. Grg 1089 Jan 19 Venus: +251.		
7.8		
10.13.3.0.11, 6 Chuwen 14 Sak Moon 29.08d; (Ecl.?)	54-7a	
Jul 1089 Jun 10. Grg 1089 Jun 16 Venus: -185		
+8.17		
10.13.3.9.8, 1 Lamat 6 Uo Moon 28.89d (Ecl.?)	55-1a -1	
Jul 1089 Dec 4 Venus: -8		
+8.17		
10.13.4.0.5, 9 Chicchan 3 Zac Moon 28.71d (Ecl.?)	55-2a -1	
Jul 1090 May 30 Venus: +169		
+8.17		
10.13.4.9.3, 5 Akbal 16 Pop Moon 29.52d (Ecl.?)	55-3a	
Jul 1090 Nov 24 Venus: -237		
+8.17		
10.13.5.0.0, 13 Ahau 13 Yax Moon 29.34d (Ecl.?)	55-4a	
Jul 1091 May 20 Venus: -60		
+8.17		

10.13.5.8.17, 8 Caban 5 Pop Moon 29.16d (Ecl.?)	
Jul 1091 Nov 13 Venus: +117	
+8.17	
10.13.5.17.14, 3 Ix 2 Yax Moon 28.98d (Ecl.?)	
Jul 1092 May 8 Venus: -290	
+7.8	
10.13.6.7.2, 8 Ik 10 Kayab Moon 29.32d (Ecl.?)	56-2a
Jul 1092 Oct 3 Venus: -142	
+8.17	
10.13.6.15.19, 3 Cauac 2 Mol Moon 29.13d (Ecl.?)	56-3a
Jul 1093 Mar 29 Venus: +35	
+8.17	
10.13.7.6.16, 11 Cib 19 Pax Moon 28.95d (Ecl.?)	56-4a
Jul 1093 Sep 22 Venus: +212	
+8.17	
10.13.7.15.13, 6 Ben 11 Yaxkin Moon 28.77d (Ecl.?)	57-1a -1
Jul 1094 Mar 18 Venus: -195	
+8.17	
10.13.8.6.10, 1 Oc 8 Pax Moon 28.59d (Ecl.?)	57-2a -1
Jul 1094 Sep 11 Venus: -18	
+8.17	
10.13.9.6.5, 5 Chicchan 18 Muan Moon 29.22d (Ecl.?)	
Jul 1095 Sep 1 Venus: -247	
+8.17	
10.13.9.15.2, 13 Ik 10 Xul Moon 29.03d (Ecl.?)	
Jul 1096 Feb 25 Venus: -70	
+7.8	
10.13.10.4.10, 5 Oc 18 Mac Moon 29.39d (Ecl.?)	58-2a
Jul 1096 Jul 22 Venus: +78	
+8.17	
10.13.10.13.7, 13 Manik 10 Zotz Moon 29.2d (Ecl.?)	58-3a -1
Jul 1097 Jan 15 Venus: +255	
+8.17	
10.13.11.4.4, 8 Kan 7 Mac Moon 29.02d (Ecl.?)	58-4a -1
Jul 1097 Jul 11 Venus: -152	
+8.17	
10.13.11.13.1, 3 Imix 19 Zip Moon 28.83d (Ecl.?)	51-b1 -1
Jul 1098 Jan 4 Venus: +25	
+8.17	
10.13.12.3.18, 11 Etznab 16 Ceh Moon 28.65d (Ecl.?)	51-2b -1
Jul 1098 Jun 30 Venus: +202	
+8.17	
10.13.12.12.16, 7 Cib 9 Zip Moon 29.47d (Ecl.?)	51-3b
Jul 1098 Dec 25 Venus: -204	
+8.17	
10.13.13.3.13, 2 Ben 6 Ceh Moon 29.29d (Ecl.?)	51-4b
Jul 1099 Jun 20 Venus: -27	
+8.17	
10.13.13.12.10, 10 Oc 18 Uo Moon 29.1d (Ecl.?)	51-5b
Jul 1099 Dec 14 Venus: +150	
+8.17	



Beyer (1943) discovered that this 13.9.1.3 distance number leads from Imix 9 Wo on page 63 to 9 K'an 12 Kayab (13.8.6.4.4.). The base date of the Serpent numbers is seven calendar rounds earlier.

All dates are taken from Thompson (1972:80). See his discussion of the serpent numbers for a history of discovery.

3 Chikchan 13 Ak'bal 13 Imix 400 300 200 100 80 60 40 20 15 10
 13 Xul 11 K'ayab 9 Wo

8.11.7.13.5 3 Chikchan 8 K'ank'in

8.16.3.12.3 13 Ak'bal 11 Yaxk'in

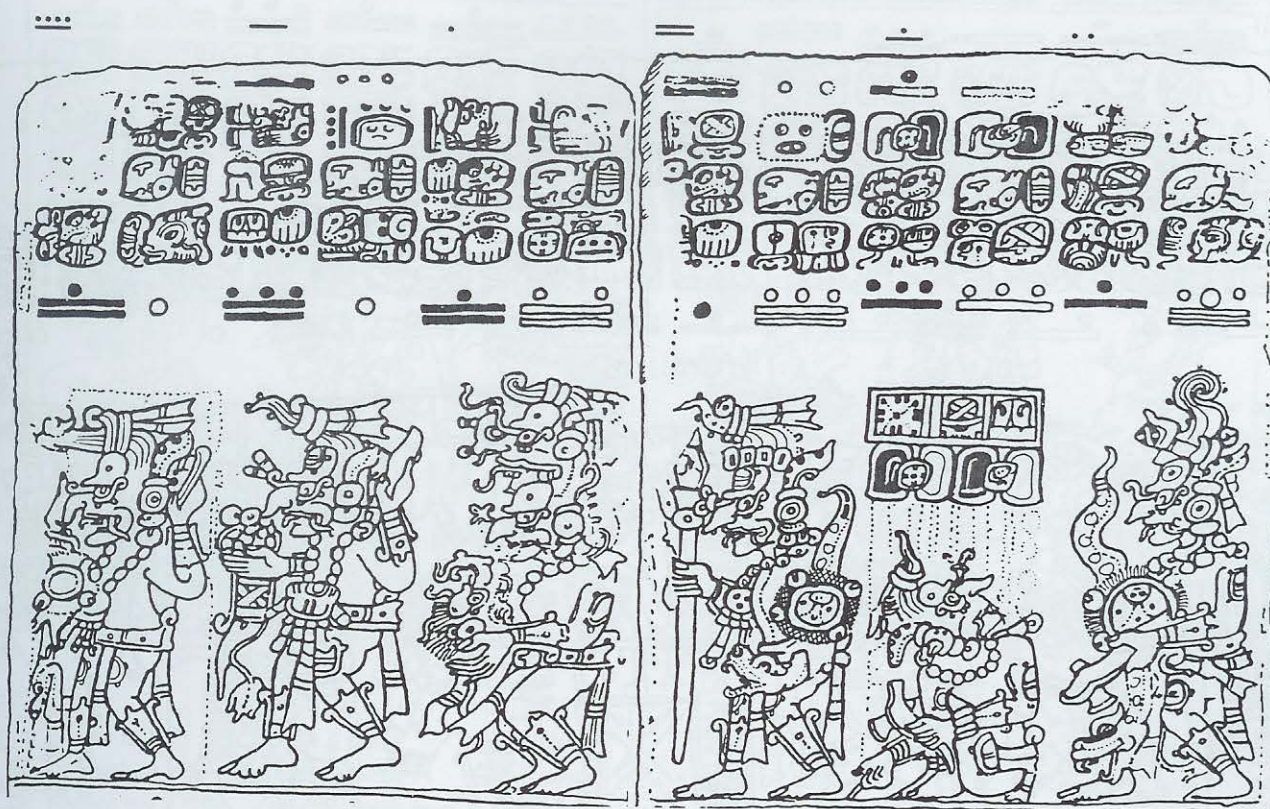
10.6.10.6.3 13 Ak'bal 1 K'ank'in

10.6.10.6.3 3 Chikchan 8 Sak

These base dates for the beginning dates of this table are ninety-one days earlier than the first column. These days correspond to some of the serpent and ring number dates

possible base dates of the almanac
and the reconstructed distance numbrers
for the top row

Dresden 65-66a



??? ?? ta kan
??? Chak
Sak Ok ??
Nal

k'am k'awil
Bolon Ox Na,
??Kan Chak,
Ak'ab Hal
Muk Wil

u tzuk k'awil
Hal Ok Chak
k'a wah ha,
k'in nal

u kan ??li
?? Ok
Chak
?? hal kun
kab

??? k'in ???
Uh
Al Ok Chak
k'in-ak'ab
ich kab kan

??ip ???
Ho Kan Chak
chay bay
yah nal

[missing]
in the sky ???
Chak
White foot
Maize God

received K'awil
Nine-Three
House
Seated-Sky
Chak,
Night Sea
divination of
abundance

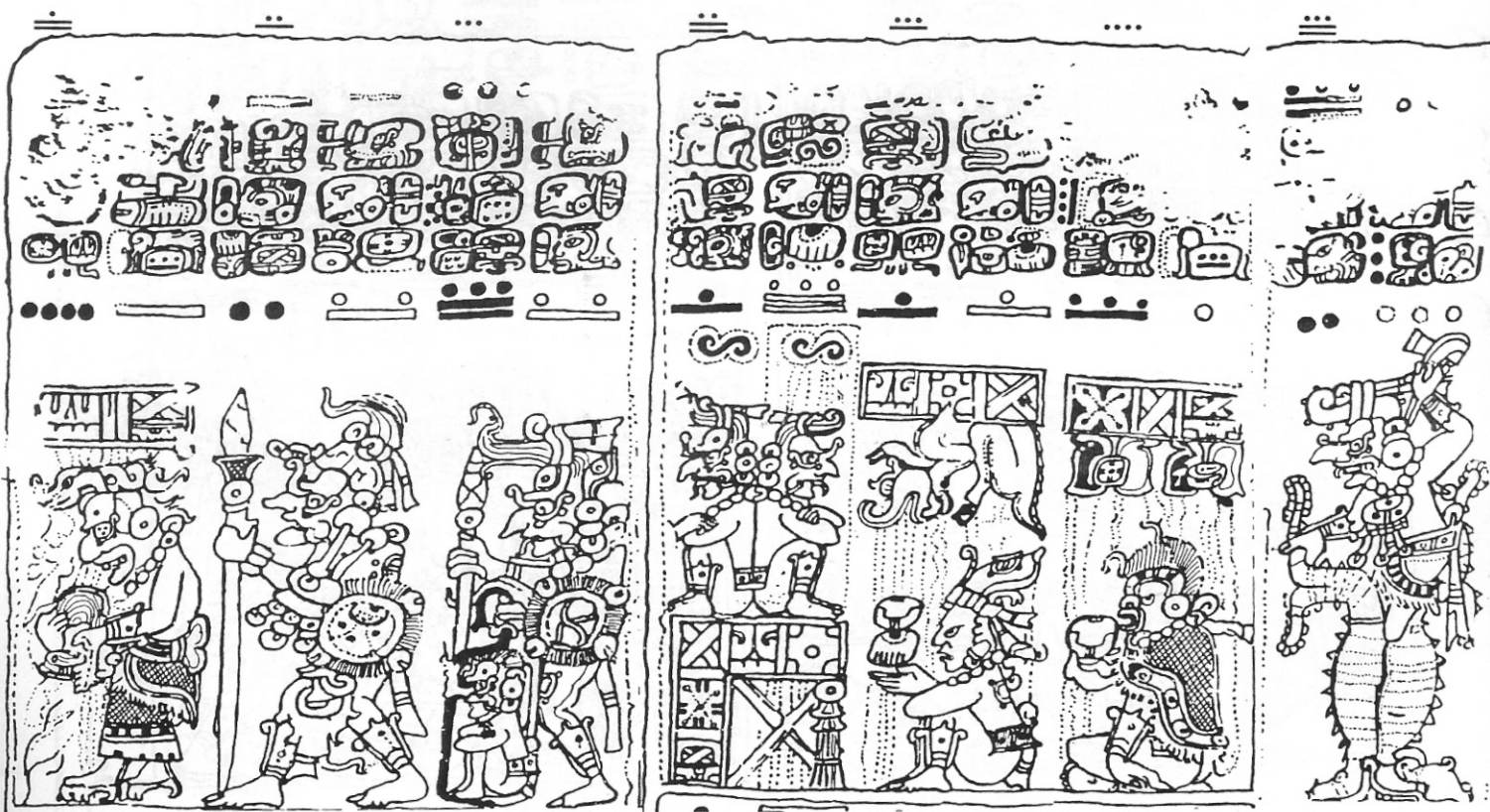
he conjured
K'awil
Hal Ok Chak
surplus of
food and
water
sun place

its sky ???
?? Ok
Chak
?? Water
Seat Earth

eclipsed the
sun and
moon,
Al Ok Chak
day-night in
the earth and
sky

[missing]
Five-Sky
Chak
??? ???
damage to
the ears of
maize

This almanac has two sets of numbers—one above and one below the texts. Both sets count from a base date with a coefficient of three, which could be any of the base dates with a coefficient of three recorded in the serpent number, ring numbers, and in the starting column of the table on D63-64. Both sets of numbers accumulate 91 days. The table on pages 63 and 64 also counts twenty groups of 91 days to accumulate 1,820 days. Then these larger cycles are counted up to 400 times. Of course, 4×91 is 364 days, any important cycle for calculations and for tracking the moon. It is the fundamental module of this almanac and the next one. The other fundamental number in this almanac is 1820 days, which 20×91 and also 5×364 . We will see this number again in the New Years pages of the Paris Codex.



[missing]
Chel
k'in-ak'ab
?Mo?-nal

u yalwa
K'awil
Ek'-Xib-Chak
Bachan Kan
Sak K'in

hok'ah K'awil
mi-k'ak' - buk'
Chak
Ek' Kan ?? Nal

???? Ha Muy
Ahaw
?? Kan- Chak
???-Nal ta
Hal

si kanah Ak
Nal Chak
k'in-ak'ab
k'a wah ha

[missing]
Bolon K'u-
Okte [Chak]
buk sa kab
k'unal

Oxlahun
[missing]
Chak
[lo]b,
ox wil mu

[missing]
{Chak}
Chel,
day-night at
Macaw place

he threw
K'awil
Ek'-Xib-
Chak,
first little sky
white sun

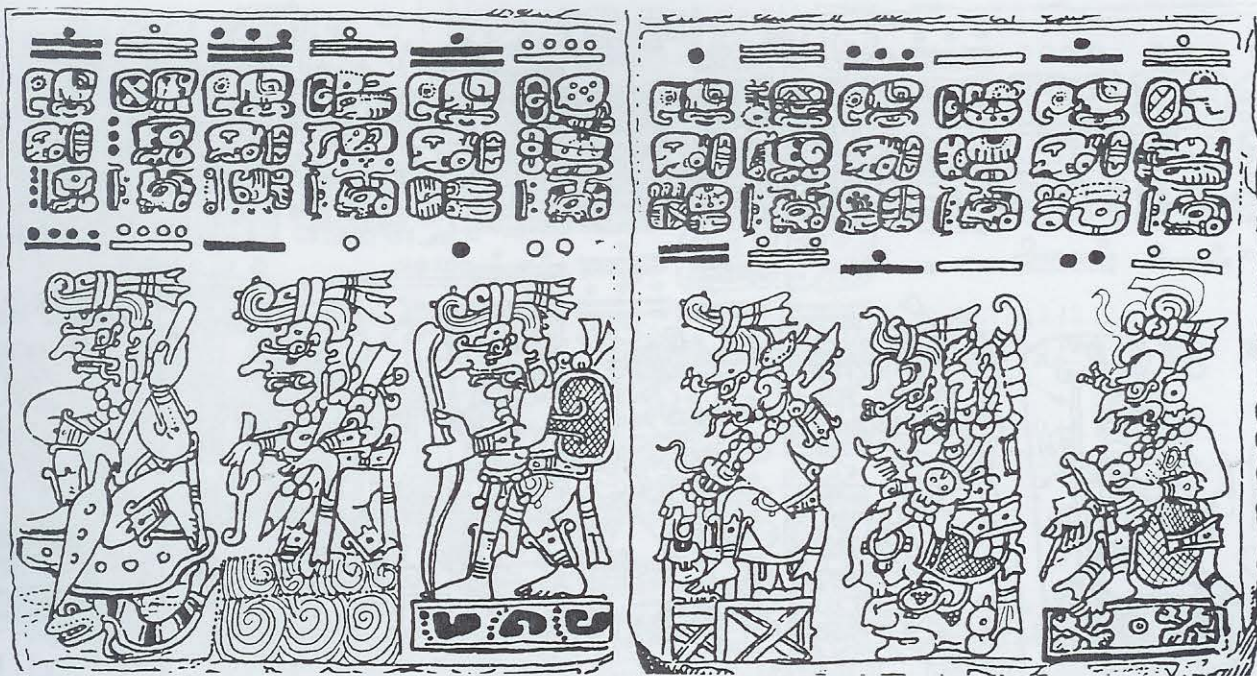
was tied up,
K'awil
??fire-?-Chak,
Black-Sky
Maize

Back to back
Rain-cloud
Lord
Seated-sky
Chak
???-maize in
rain

was sky-born
the peccary
K'awil
day-night
surplus of
bread and
water

[missing]
Bolon-K'u-
Octe [Chak]
??? earth god
place

13 [missing]
Chak.
badness,
much food
????



an ta kab
Chak ox wil,
bolon wa u sih

exists in the
earth
Chak, much
food, 9
tamales are his
gift.

an ti om
Chak yomul
Ah chih wah
u sih

exists in foam
Chak,
foamy*,
deer tamale is
his gift.

an ti beh
Chak yutzil
sukuk*
u sih

exists in the
road
Chak,
goodness,
black or poor
tamale is his
gift.

an ti kan
Chak k'o* wil
sa tzik
u sih

exists in the sky
Chak,
stomach food,
????
is his gift.

an ti witz
Chak
chak hal
buk tzu* u sih

exists on the
mountain
Chak,
red ???
thickened
beans
are his gift.

*an tan ???**
Chak
yax xul men
sak k'u wah
u sih

exists in the
??? Chak,
first end of
work
white holy
tamale is his
gift.

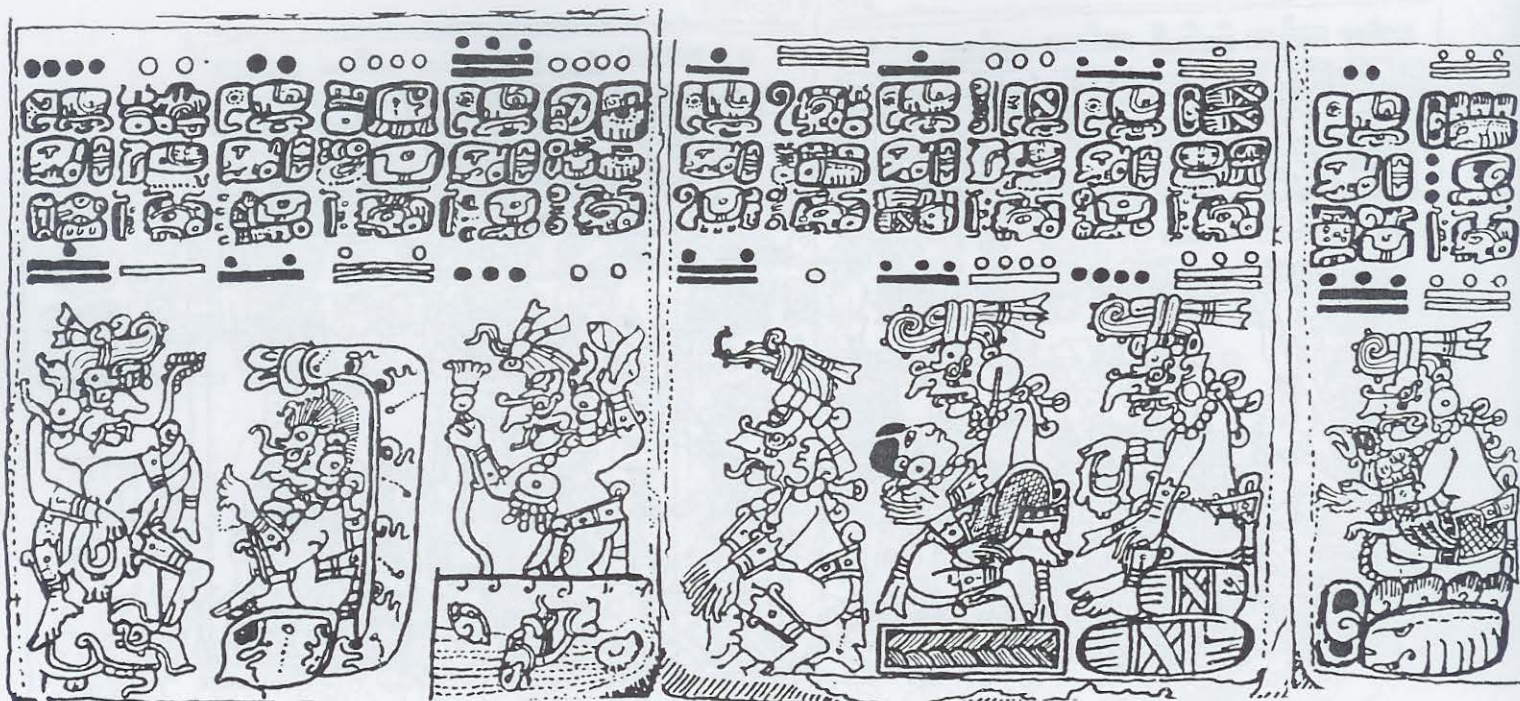
* *Yom* is also "to be pregnant," so that the divination here may be pregnancy for women.

* The Motul dictionary glosses *sukuk* as "pan baço, basto, o negro p comida simple y pobre." *Zucuc bacal* is "mazorca de maiz sin grano, que no granó."

* *K'o* is glossed in the Motul as "belly or stomach."

* *Tzuh* is glossed as "horno de pan" and *tzuhbil wah* is "oven-cooked bread." *Buk* is "clothes" of all sorts, and *bukba* is "thickened beans." Perhaps this offering is beans thickened in an oven.

* We do not know the phonetic value of this seated body, although Floyd Lounsbury, Peter Mathews, and Schele have entertained a value of *wa*, from a Yukatek verb for "seat." What ever this location is, it refers in some way to a band with crossed bones.



an ti yax che'
Chak
yo ?? n
ko-?bo*? -??
u sih

exists in the
ceiba Chak,
????
damaged
maize is his
gift.

an sak kab
Chak
sak ?? wah
huh wah
u sih

exists in white
earth cave
Chak,
white ??
tamale
iguana tamale
is his gift.

an ta ha
Chak
k'a wah ha
kay wah
u sih

exists in water
Chak,
surplus of
bread and
water
fish tamale is
his gift.

an ????
Chak
ti ahaw le
ne wah
u sih

exists in ??
Chak,
in reign
tail tamale-is
his gift.

an ah atan
Chak
yo-??-n
sat* ???
u sih

exists in
marriage
Chak,
yo??n
seedless ???
is his gift.

an ti tot
Chak
k'in ak'bal
ma wah
u sih

exists at Tot*
Chak,
day-night
no bread is
his gift.

an ti hem
Chak
ox wil
kabil wah
u sih

exists at
village
Chak,
much food
twice-cooked
bread is his
gift.

*The glyph for the gift begins with *ko* followed by a sign that Nikolai has tested as *bo*. *Kob* is Yukatek for a damaged ear of maize. This is a possible reading here, but the final sign remains a mystery.

* This collocation seems to consist of a *sa* sign over a *to*. *Satay* is glossed in the Cordemex as "something that cannot reproduce, such as a squash with a dry interior." Perhaps this is a special bread or atole made with such fruit.

*This location consists of a double *to* sign, although Yukatek does not yield a meaningful gloss of *tot* that works with this context. However, a related glyphs shows up in a title at Yaxchilan

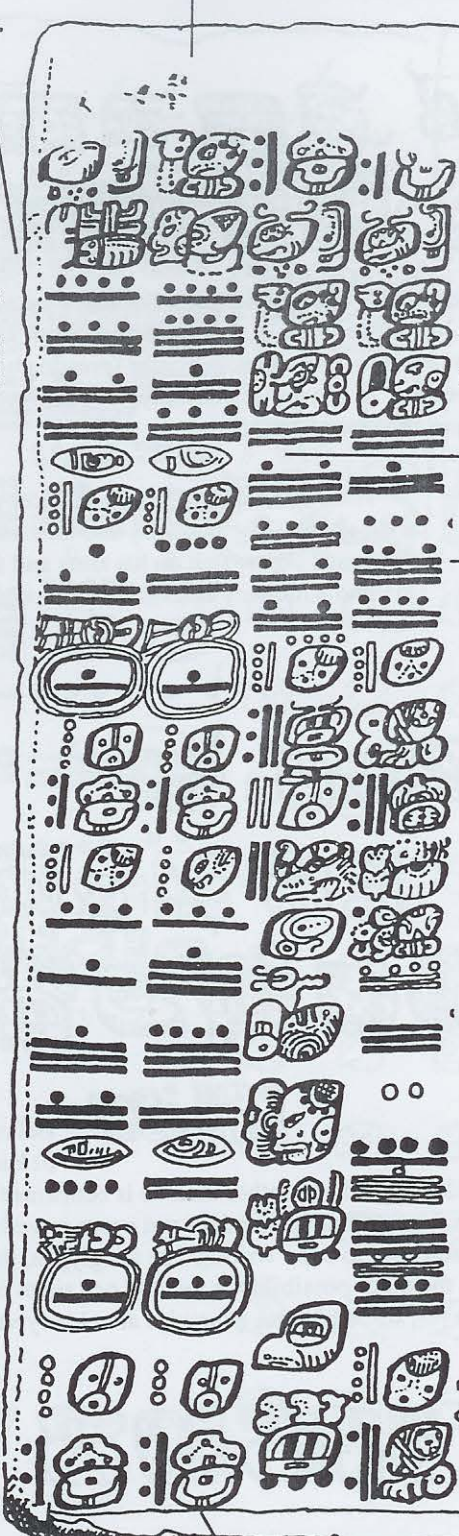
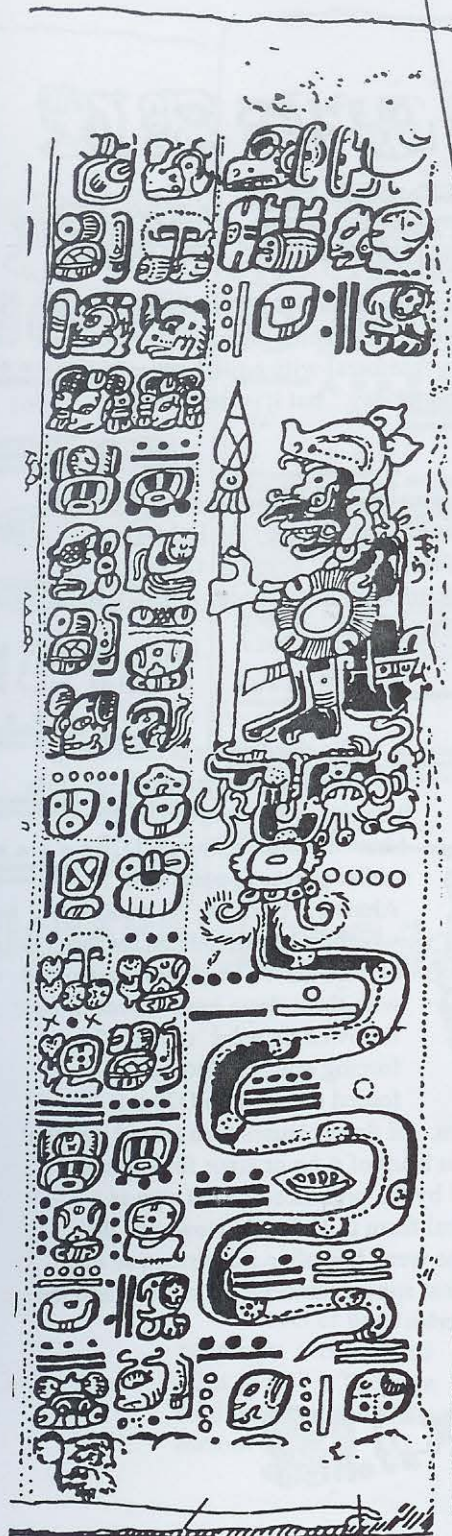


Victoria Bricker translated many of these gifts in her 1991 paper on "Faunal Offerings in the Dresden Codex."

This almanac has exactly the same two sets of distance numbers as the almanac in Register A. Here, however, the distance numbers count from one of the 13 Ak'bal dates recorded on pages 61-65. In this almanac, Chak appears in thirteen different locations. Interestingly, the Paris New Years zodiac divides 364 into thirteen repetitions of 28 that correspond to the zodiac segments of the sky.

12.19.18.5.14 9 Ix 7 Xul
9.13.10.15.14 9 Ix 12 Muwan

12.19.15.7.14 9 Ix 2 Ch'en
9.19.7.2.14 9 Ix 117 Ch'en



10.17.13.12.12.
4 Eb 5 Pop

10.11.4.0.14 9
Ik' 7 Sip

This next section also begins with a serpent number and ring numbers, this time yielding base dates falling on 4 Eb and 9 Ix.. The texts introducing these sections are almost identical to each other.

9.16.8.5.12
4 Eb 5 Ch'en

9.17.15.6.14
9 Ix 12 Sip

12.19.19.7.12
4 Eb 0 Mol
8.16.19.0.12
4 Eb 5 Yax

12.19.19.13.14
9 Ix 2 K'ank'in
8.6.16.7.14
9 Ix 7 Mak

Dresden 69-70

D61



D69



The first phrase is damaged in both contexts. The second clause includes the verb that David Stuart has read as *patah* in Chol "to form or make." Schele has suggested *k'at*, "to want, to ask for, and to cross something." The verb is followed by a piktun sign, 8 "sky" or *pi* for bak'tun, two unknown glyphs (presumably numbers) with *pawah* superfixes and *k'atun*, eight haabs or tuns, and sixteen *yok'in* or *yon*. The last glyph should record "day," but it is the title that shows up in the 9-16-9 phrases at Palenque and elsewhere.

D61



The second clause begins with the same verb, but this time it is followed by *Ah winik* ("the person") and the name of Yax-Balam, the Hero Twin who wears jaguar pelt on his arms and face. The last glyph is *Ah mi k'in* on D61 and a monkey head with a *k'in* sign infixed on his cheek. It may read *ah Ma K'in*.

D69



D61



D69



D70



The third phase is tantilizing, but difficult to understand. On D61 it begins with the creation date 4 Ahaw 8 Kumk'u, but on D70 a similar phrase appears with 10 Ahaw 13 Yaxk'in. We don't know which LC was intended for this second date. The clauses associated with these dates have *hanak* or *ha* followed by *u lok'* or *lok'*, "his forcing out." On D61, *pi* was forced out, and on D70 it is Yax-Balam. All three clauses then record the sign *och* in front of *ti ha* or signs for various

calendrical cycles. That the rattlesnake tails are read *och* rather than *ok* is confirmed by the presence of a *chi* sign as a phonetic complement to several examples. Unfortunately *och* does not occur in verbal form in Yukatek. However, the Motul lists *hoch* with the weak *h* as "to paint" or "to copy writing." In the glyphs, the weak *h* is often not written so that *hoch* would be realized as *och*. However, the other possibility is that the *och* signs that appear between the number and the cycle sign are numerical classifiers. However, some of these examples are clearly verbs.

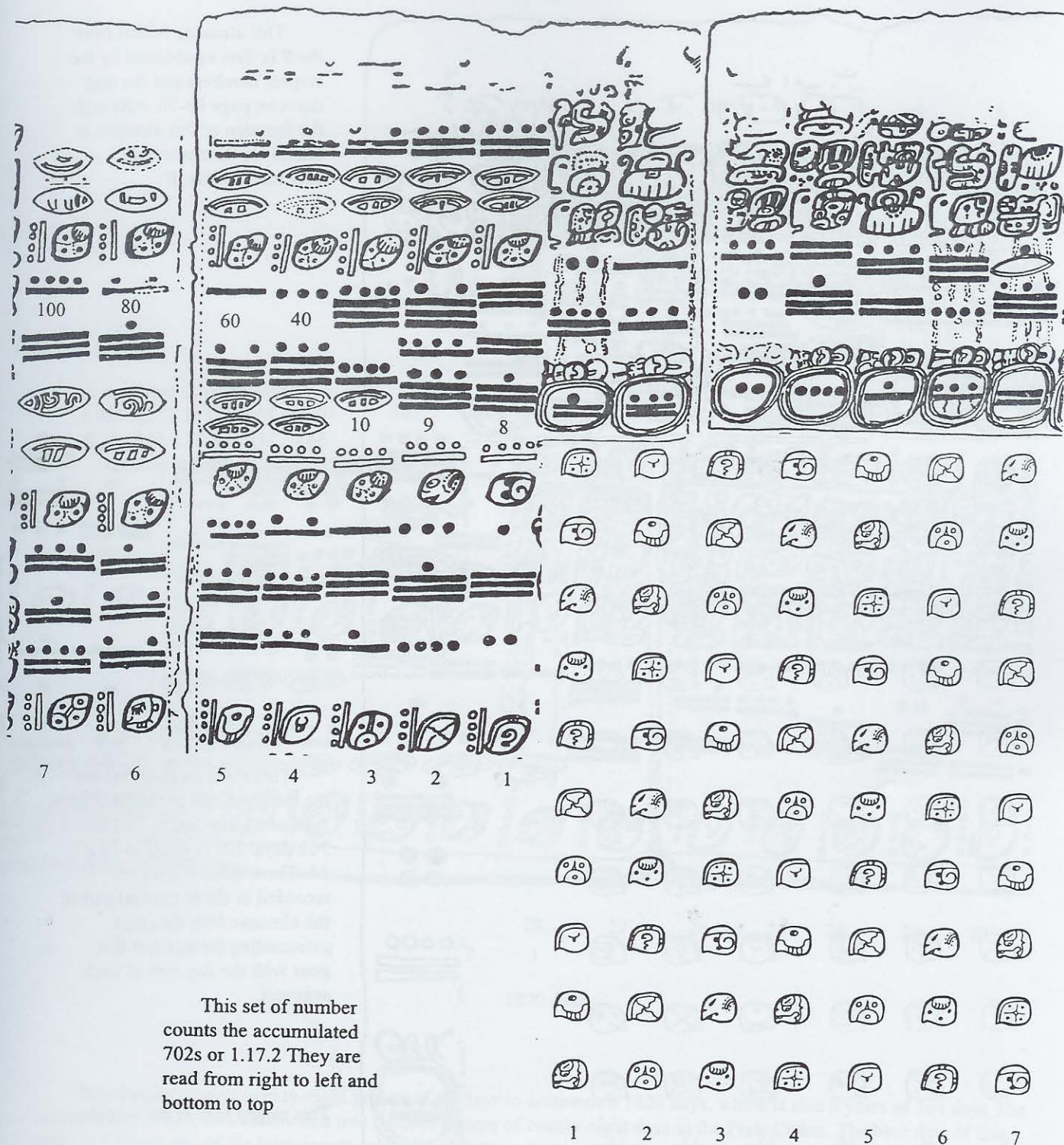
D61

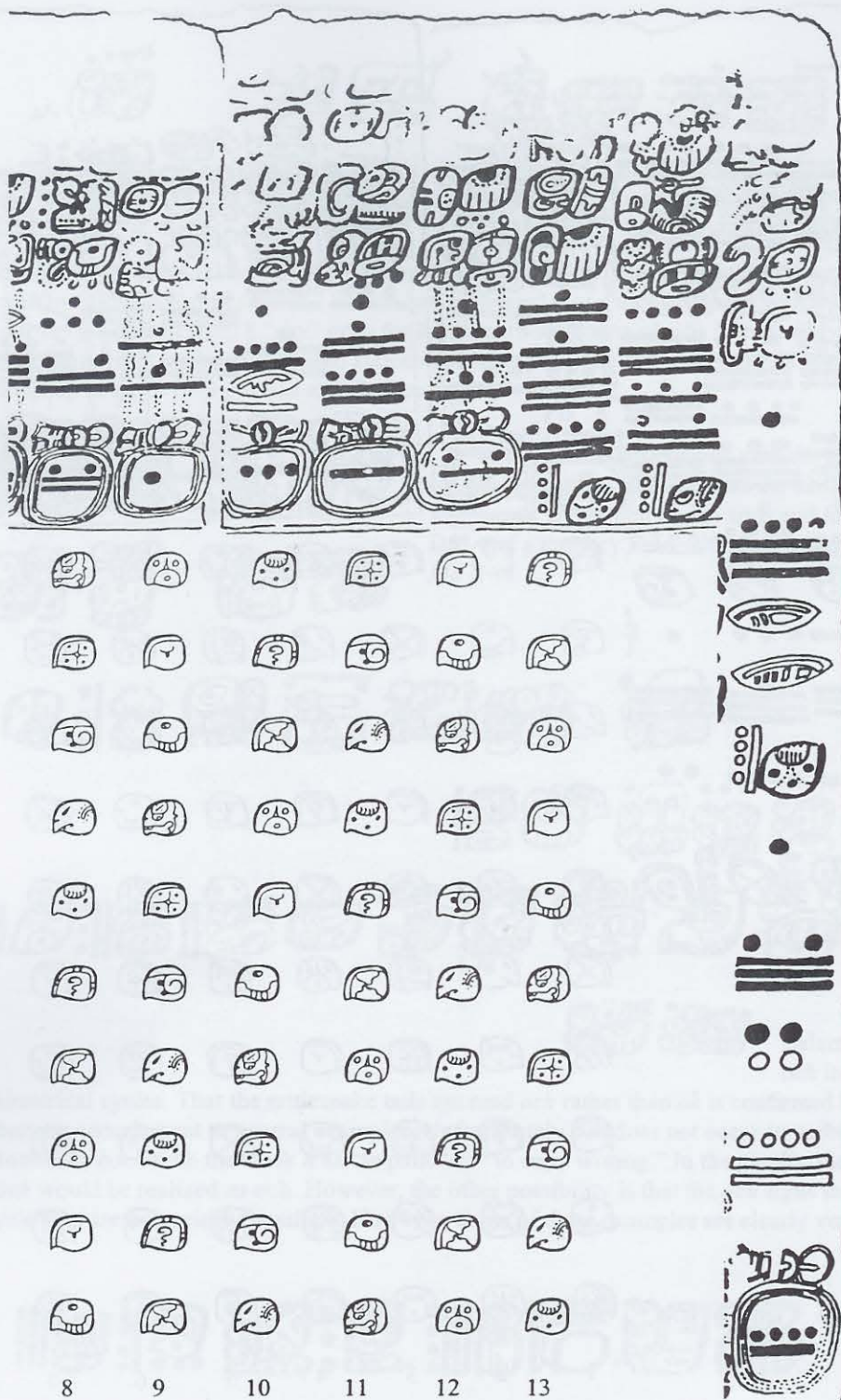


D69



The final component again begins with the *patah* or *k'atah* verb, which is followed by distance numbers. The dn on D61 leads from the last ring number base on D70 (12.12.17.3.1 13 Imix 9 Wo) to 9 K'an 12 K'ayab (13.8.6.4.4), a later position of the serpent number base date. The dn on D69 presumably works the same way, but the ring date it starts from was not recorded. According to Thompson (1972:81) it goes from 12.12.17.0.0 4 Ahaw 13 K'ayab to the same 9 K'an 12 K'ayab. We do know understand how these later dates were used.





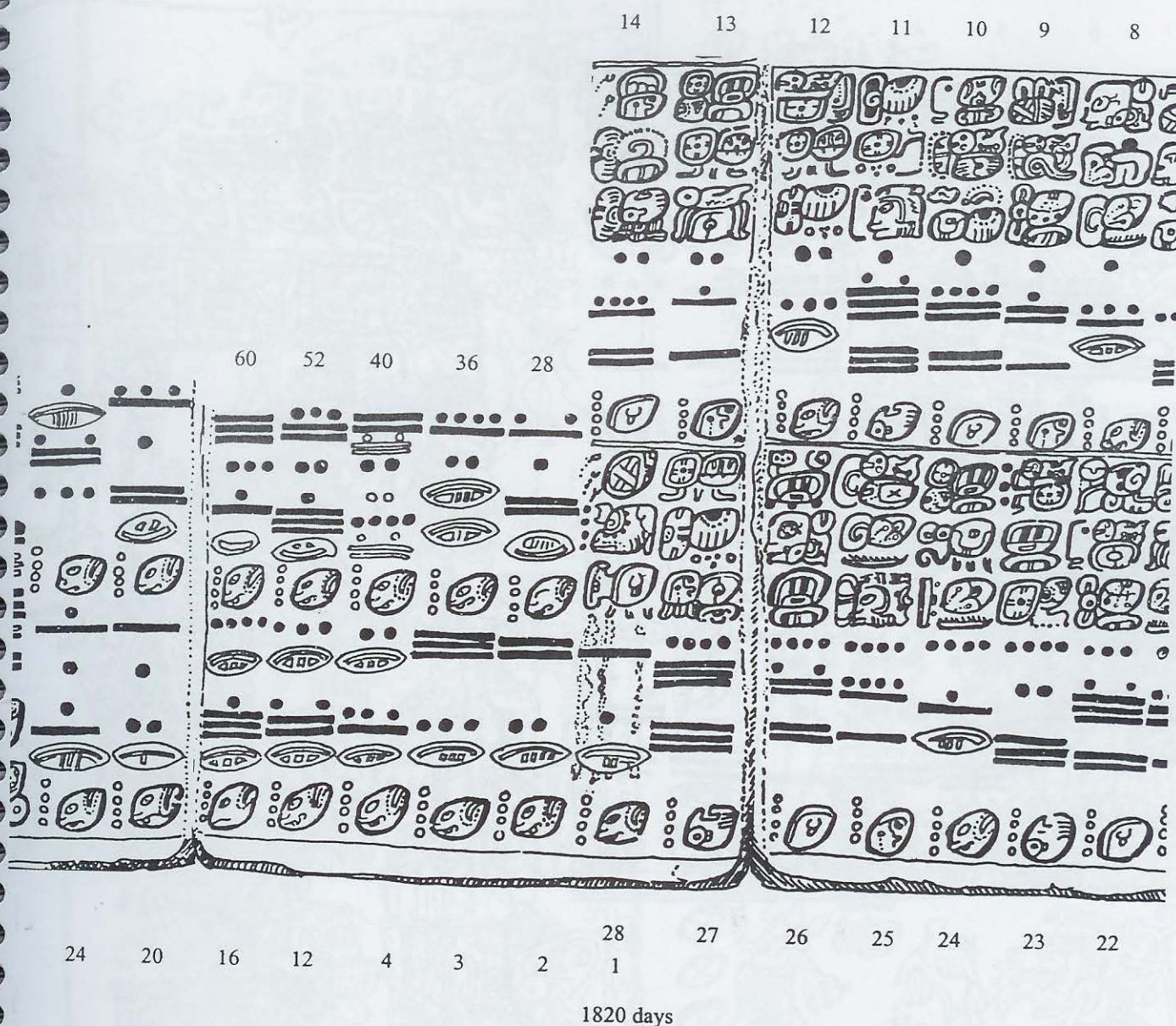
This almanac counts from the 9 Ix date established by the serpent numbers and the ring dates on page 69-70. Although the function of this almanac is unknown, its mathematic structure is clear. It

This distance number equal 20×702 (1.17.2); 260×54 (2.14), and 27×520 , a number associated with the lunar nodes.

These two numbers record the basic module of the almanac, 2.14 or 54 days and 1.17.2 or 702 days. 702 is equal to 13×54 . These subdivisions are recorded in the horizontal part of the almanac with the rings surrounding the number that goes with the day sign of each segment.

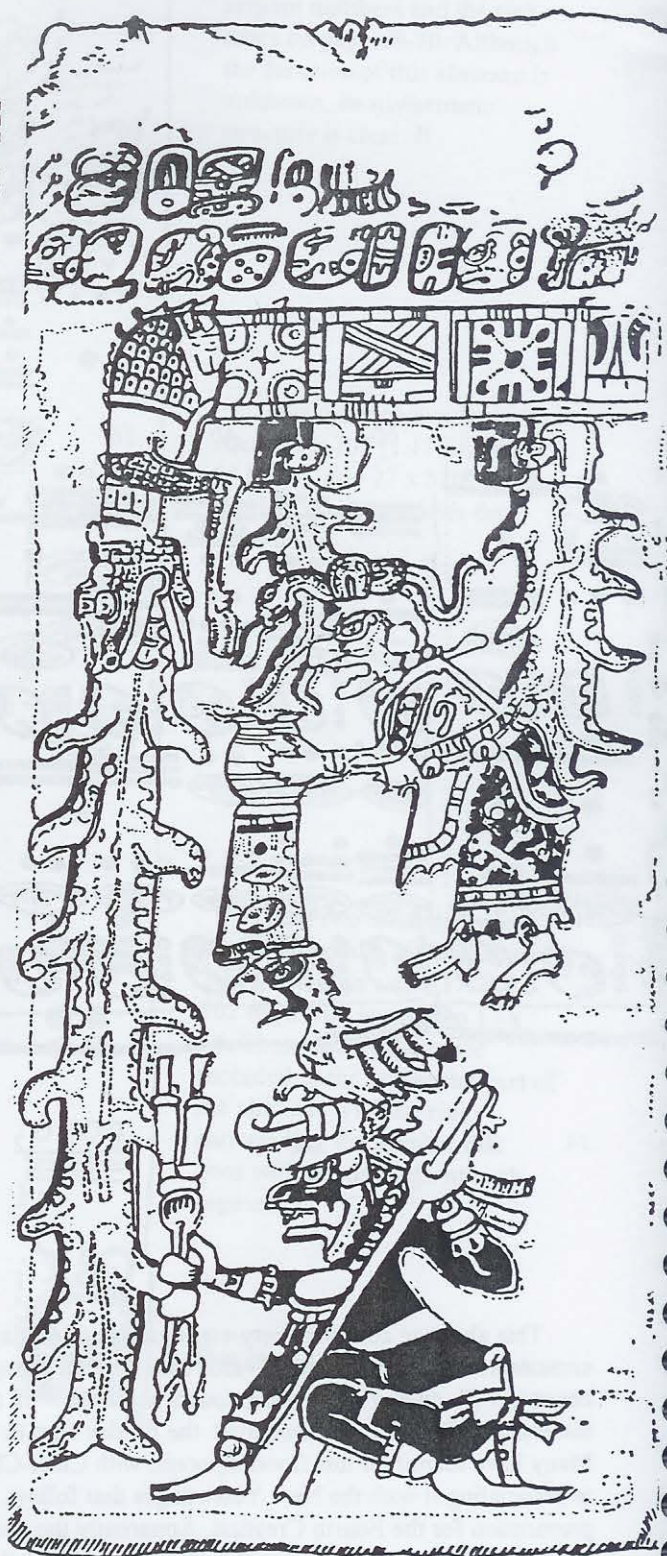
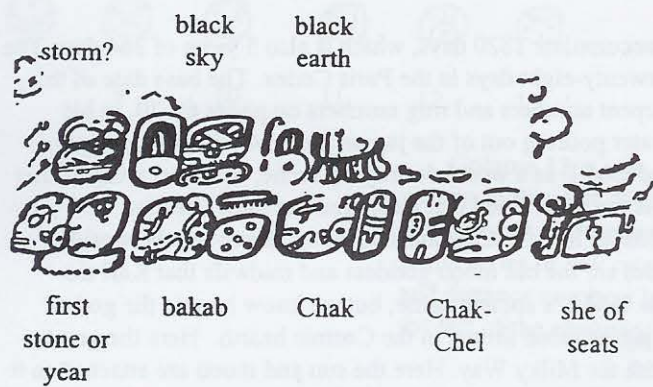
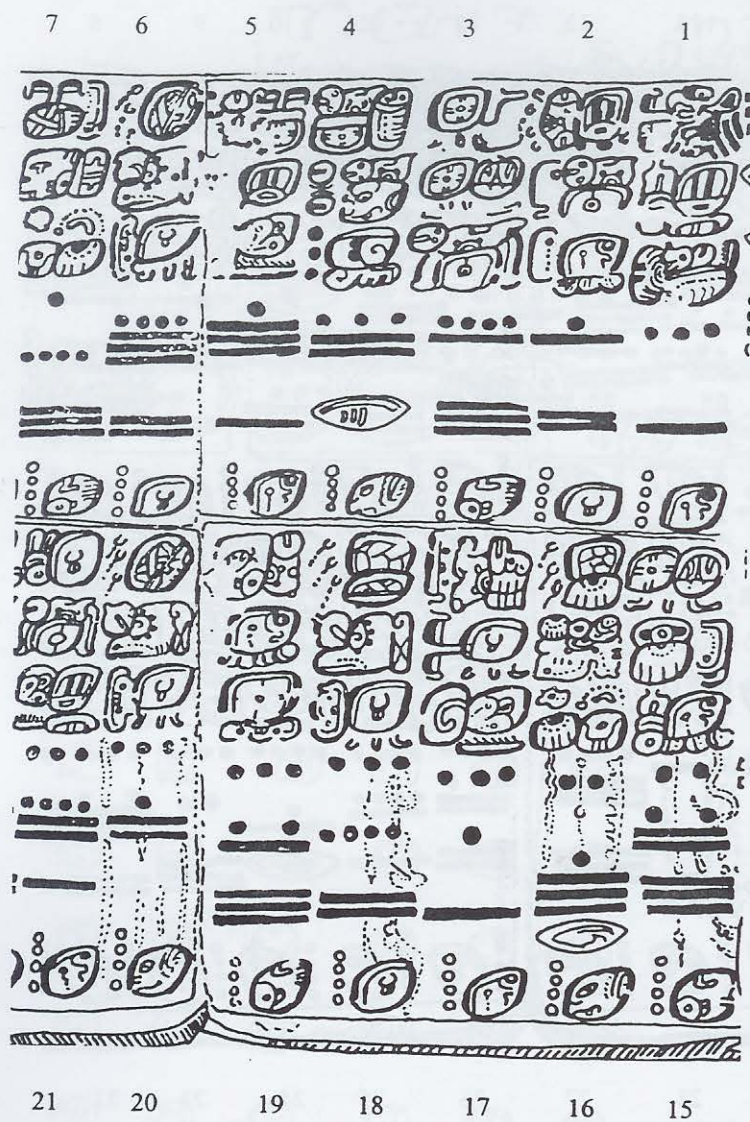
This ringed nine is the base date.

Column 13 is not written in this part of the almanac but corresponds to the series of day signs and distance numbers to the left of the almanac.



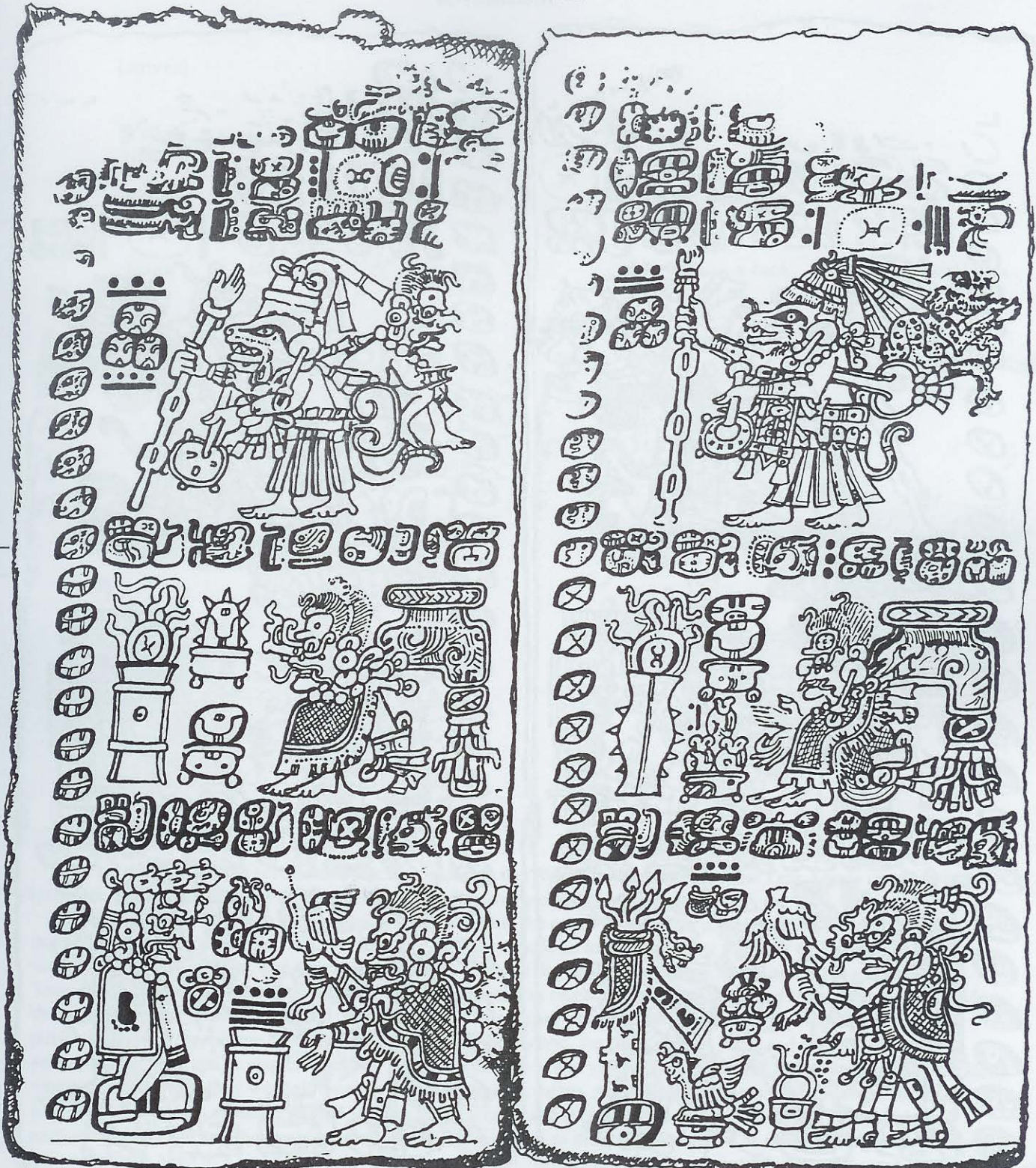
1820 days

This almanac counts twenty-eight groups of 65 days to accumulate 1820 days, which is also 5 years of 364 days. The same number, 1820, was subdivided into thirteen groups of twenty-eight days in the Paris Codex. The base date of this count is 4 Eb on any of the long counts achieved with the serpent numbers and ring numbers on pages 69-70. In his dissertation, Karl Taube associated the Eb day sign in the water pouring out of the jug on page 74 with this almanac. Many have identified this flooding scene with Chak-Chel and God L as a world destroying scene, but Karl went further in associating it with the New Years pages that follow. This is the great flood that destroyed the third Creation in preparation for the Fourth Creation. Apparently the ancient Maya, like the Chamulas of today, destroyed the world before recreating it in the New Year ceremony. Here the actors are the old moon goddess and midwife that Karl discussed with brilliance in Justin's vase books. We don't know God L's ancient name, but we know he was the god of merchants, Ek' Chuwah, and he was the god who sat on the jaguar stone throne in the Cosmic hearth. Here the great flood fall from the Cosmic Monster that is also associated with the Milky Way. Here the sun and moon are attached to it so that it very probably refers to the two points where the ecliptic and the Milky Way cross.



last day of Wayeb

New Year day



These are the New Year pages of the Dresden codex. Each page is divided into three sections, the first of which occurs on the last day of the old year, 5 Wayeb or the seating of Pop, and the last two of which take place on the first day of the New Year or 1 Pop. These four days in the tzolk'in are called Year Bearers because of the structure of the calendar. The current creation began on 4 Ahaw 8 Kumk'u. The first 1 Pop in this Creation took place seventeen days later on 9 Etz'nab 1 Pop. Since there are 260-day tzolk'in is evenly divisible by 20, and since the 365-haab is divisible by 20 with a remainder of 5, 1 Pop must always fall on Etz'nab and those days separated by five—that is, Etz'nab, Ak'bal, Lamat, and Ben. Since dividing 365 by 13 gives a remainder of 1, each the number of each New Year rising by



one. The pattern here is 1 Ben, 2 Etz'nab, 3 Ak'bal, 4 Lamat, 5 Ben, 6 Etz'nab, etc.

The Year Bearer in Yukatan during Landa's time were one day later giving K'an, Muluk, Ix, and Kawak. Today in the highlands of Guatemala, the Year Bearers are retarded by one day from the Classic set to give Ik', Manik', Eb, and Kaban or in the highland name system Iq', Kej, E, and Noj. We do not know how these calendric displacements occurred, although many dates on monuments in the northern Yukatan area have months retarded by one day. This calendric system would yield the Yucatekan system, but it does not explain out the highland Year Bearers displaced in the other direction. Cyrus Thomas first identified the New Year's pages and analyzed their structure.

[arrived]

[tal]

[Yellow
Nawal]

[u mam]

k'a wah
ha

[bird?]

Chak
Way

u mam

K'awil

u kuch

bolon
pomil

wuk ???

tok'-
Abil

Ix-Sak
Abil

winik

kakaw

u sih

tok' ??
te

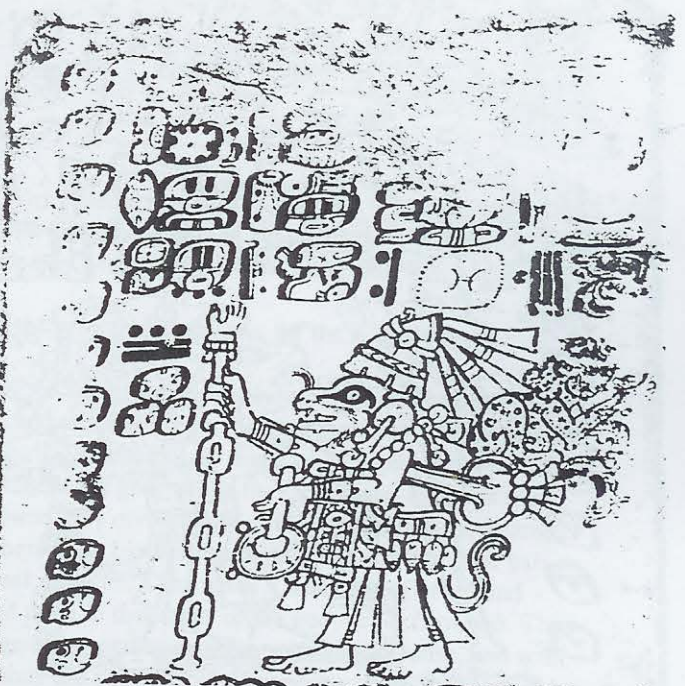
[tzak
ahaw]

k'in-tun-
ab

u kuch
pom

wuk
pom

waklahun
ch'ah



These sections record the ceremonies that took place on the Wayeb days before the New Year. Landa recorded these Wayeb rites in his description of the New Years ritual. We will include two examples:

"In the of year of which the dominical letter was Kan, the omen was Hobnil, and, according to what they said, they both ruled in the region of the South. In this year then they made an image or hollow figure of the god of clay, which they called *Kan u Uayeyab*, and they carried it to the heaps of dry stones which they had raised at the southern side. They chose a chief of the town in whose house this festival was celebrated on these days, and to celebrate it they made the statue of a god, which they called *Bolon Dzacab*, which they placed in the house of the *principal*, adorned in a public place where everyone could go to it. This having been done, the lords and the priest and the men of the town assembled together and having cleaned and adorned with arches and green the road leading to the place of heaps of stone where the statue was, they went all together to it with great devotion. And when they came there the priest incensed it with forty-nine grains of maize ground up with their incense, and they distributed it in the braziers of the idol and perfumed him. They call the ground maize alone *sacah* and that of the lords *chahalte*. The image having been incensed, they cut off the head of a hen and presented or offered it to him. This having been done, they placed the statue upon a standard called *kante*, also placing upon its shoulders an angel, as a sign of water and that this year was to be good; and they painted these angels, and made them frightful to look upon. And thus they carried it with much rejoicing and dancing, to the house of the *principal* where the other statue of *Bolon Dzacab* was standing."

The creature in this scene is a possum (*och*), but the text calls him an *K'an Way u Mam*, *Chak Way u mam*, *Sak Way u mam*, and *Ek' Way u mam*. *Mam* is the word for grandfather and ancestors in general, and in some Maya groups it is the name of old earth gods. Here the possums must be the gods Landa called the *K'an u Wayeb*. The god described as being placed in the house of the principal is carried in by the Wayob who are the Mam.

[arrived]

tal

[Sak]
Way

[u mam]

yax wan

Ek'
Way

u mam

k'a wah
ha

u kuch

yax k'a
wah

buluk
pom

??-Kimi

u kuch

winik

?? abih

inah

ho
ch'ahte

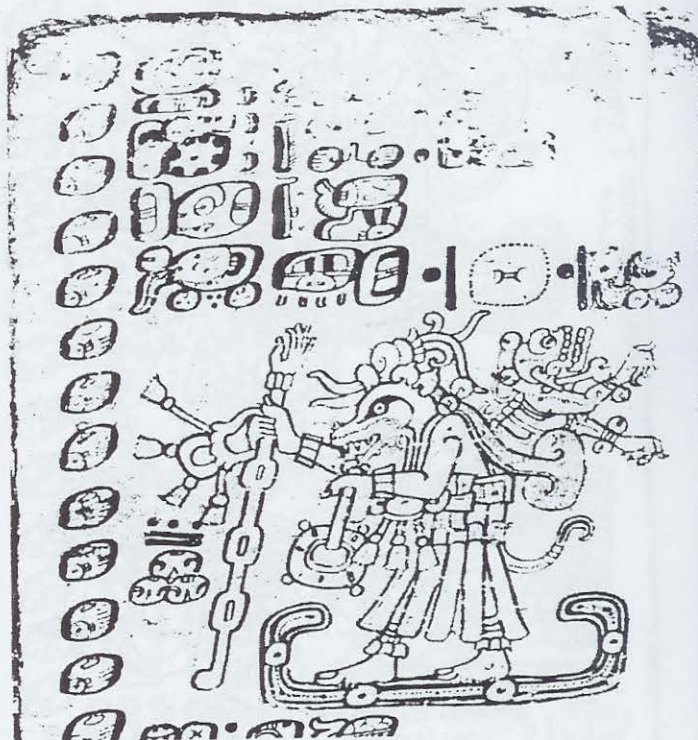
?? nikil

?? kimil

abhil

wak
pom

wak
ch'ah



The description of the next year in Landa goes as follows:

"In the year of which the dominical letter was Muluc, the omen was Can Sical; and at the proper time, the nobles and the priests chose the *principal* who was to celebrate the festival. After he had been chosen, they made the image of the god called *Chac u Uayeyab*, as they did that of the preceding year, and they bore it to the heaps of stone towards the eastern side, where they had left that of the year before. They made a statue to the god called Kinich Ahau, and they placed it in the house of the *principal* in a suitable place, and from there by a path which was very clean and ornamented, they went all together with their accustomed devotion, to the statue of the god, Chac u Uayeyab. On arriving there, the priest perfumed it with fifty-three grains of ground maize and with their incense, which they call *sacah*. The priest also gave to the nobles more incense of the kind we call *chahalte*, to put in the brazier; and then they cut off the head of a hen, as before, and taking the image on a standard called *chacte*, they bore it off all accompanying it with devotion and dancing some war-dances, which they call *Holcan okot*, *Batel okot*. They carried to the lords and to the *principals* on the road, their drink made of three hundred and eighty grains of parched maize, as before."

Here we learn that the statue call *Chak u Wayeyab* was left on the outside of the town in a pile of rocks where it would be ready for the following years. The kinds of offerings are specified in both these quotes from Landa. Lounsbury (1973) deciphered the glyph for *pom*, "incense," while Bruce Love (1987) deciphered the *ch'ahalte* as "drops of resin."

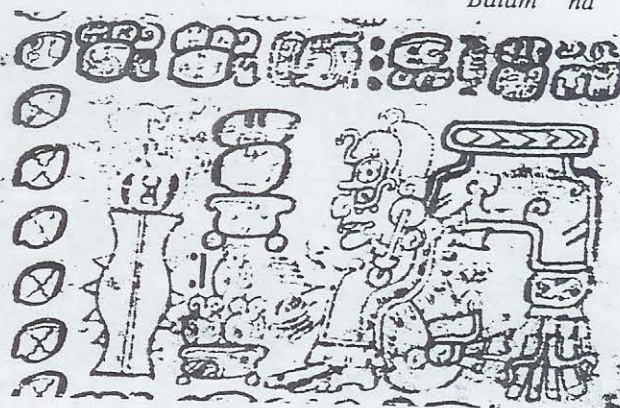
On these two pages, the *Way u Mam* stand inside the symbols of cenotes or depressions in the earth. They are associated with the directions north and west. For all four, the *K'an Way u Mam* carries *K'awil*, although the god looks like Chak. *Chak Way u Mam* carries a jaguar, *Sak Way u Mam* the Maize God, and *Ek' U Way* carries the death god.

Succeeded as lord, K'awil, his divination, deer,
damage to the seats

tz'ak ni K'awil u hak Chih ?? kunal
ahaw

Succeeded as lord, the Sun-Lord, First One,
much food, damage to the Red Jaguar, surplus
of bread and water

tz'ak K'in hunal ox ?? k'a
ahaw Ahaw wil Chak wah
Balam ha



In the second section of each page, the god carried in by the *Way U Mam* now sits in a temple. A tall incensario stand with burning copal (*pom*) sits in front of each god along with plates and other kinds of vessels from offerings. These offerings include a spikey *wah* and *wah* by itself; *chak wah* (which may be the same as *noh wah*); fish *wah* and a substance called *ka-yax-k'an*; and finally bone *wah*.

Landa also described the bringing of the gods to the house of the *principal* as follows for the K'an years :

"And thus they carried it with much rejoicing and dancing, to the house of the *principal* where the other statue of Bolon Dzacab was standing. And they brought to the nobles and to the priest on the road from this chiefs house, a drink made of 415 grains of parched maize. which they called *picula kakla*, and all drank of it. When they reached the dwelling of the chief, they placed this image opposite to the statue of the god, which they had there, and thus they made to it many offerings of food and drinks, of flesh and fish; and they divided these offerings among the strangers who were present and they gave the priest the leg of a deer. Others drew blood from themselves, cutting their ears, and anointing with it a stone which they had there of a god Kanak Acantun. They made a heart out of bread and another kind of bread with the seeds of gourds, and they offered these to the image of the god *Kan u Uayeyab*. Thus this statue and the image were kept during these unlucky days and they perfumed them with their incense, and with the grains of maize ground with incense. They believed that if they did not observe these ceremonies, they would be sure to have certain sicknesses, which they have in this year. When these unlucky days were passed, they carried the statue of the god Bolon Dzacab to the temples and the image to the eastern side, so that another year they could go and get it there. And they left it there, and returned to their houses, each occupying himself with whatever there was to do for the celebration of the new year. When once the ceremonies were ended and the evil spirit was chased away, according to their mistaken views, they considered the year as a good one, because the Bacab Hobnil ruled with the sign Kan, who, they said, had never sinned as his brothers had done, and it was on this account that no calamity came to them in it. But as it happened frequently that they had calamities, the devil had arranged it that they should perform their ceremonies to him, so that when these misfortunes came, they should lay the blame on their ceremonies and on those who performed them, and that they always should remain in error and blindness. Then he bade them make an idol named Itzamna Kauil, and that they should place it in their temple, and that they should burn in its honor in the court three balls of a sap or resin which they called *kik*, and that they should sacrifice to it a dog or a man . . . I said they observed with those whom they sacrificed except that the manner of sacrificing in this feast was different, since they built in the court of the temple a great pile of stones, and they placed the man or dog whom they were going to sacrifice on something higher than it, and throwing down the bound victim from the height on to the stones, those officials seized him and took out his heart with great quickness, and carried it to the new idol, and offered it to him between two platters. They offered other gifts of food, and in this festival the old women of the town, whom they had chosen for this purpose, danced clothed in certain garments. They said that an angel descended and received this sacrifice."

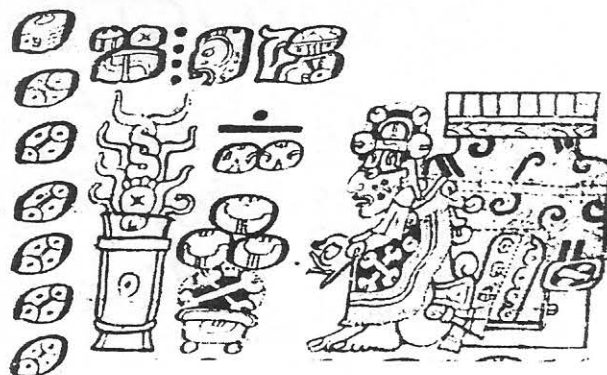
Here is the description for the Muluk years:

Succeeded as lord, Itzamna, ?? flowers

Succeeded as lord, God A', his house

tz'ak ni Itzamna ?? nikil
ahaw

tz'ak Kan- yotoch
ahaw Na

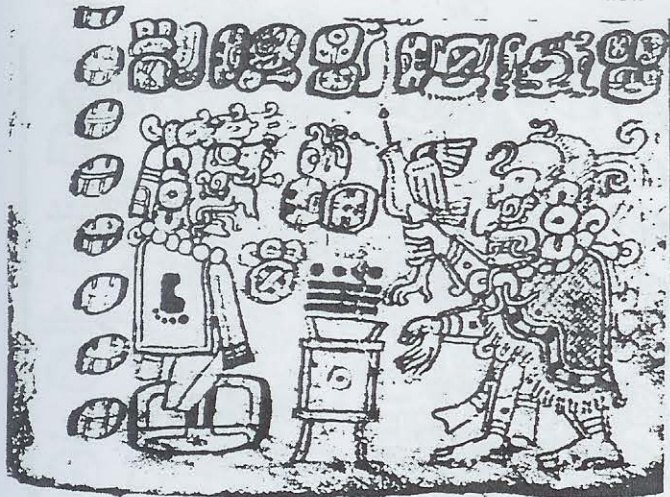


"When they reached the house of the principals, they placed this image opposite the statue of Kinich Ahau, and all made their offerings to it, which they divided as they had done the rest. They offered the image bread made with the yolks of eggs and others made with the hearts of deer, and another made of dissolved pepper. There were many people who drew their blood, cutting their ears, and anointed with the blood the stone of the god called Chac Acantun, which they had there. Here they took boys and drew blood from their ears by force, making gashes in their ears. They kept this statue till the unlucky days had passed and meanwhile they burned their incense to it.

When these days had gone by, they took the image to leave it at the north side, where they were to go out and get it on the following year; and they bore the other to the temple and afterwards they went home to engage in the preparation of the new year. If they did not do the above mentioned things, they would be likely to have much eye disease. This year in which the dominical letter was Muluc, and in which the Bacab Can Signal ruled, they regarded as a good year; for they said that he was the best and greatest of the Bacab gods; and so they placed him first in their prayers. But in spite of all this, the devil caused them to make an idol named Yax Cocah Mut to place him in the temple and to take away the old images, and to make in the court in the front of the temple a figure of stone, upon which they should burn their incense and a ball of resin or the milk *kik*, making a prayer there to the idol and asking of him a remedy for the calamities which they feared that year. These misfortunes were a scarcity of water, the abundance of sprouts in the maize and things of this kind, for preventing which the devil ordered them to offer him squirrels and a cloth without embroidery, which the old women should weave whose duty it was to dance in the temple, in order to appease Yax Cocah Mut. They had many other misfortunes and bad signs, although the year was good, unless they performed the duties which the devil imposed upon them. This was to observe a festival and in it to execute a dance on very high stilts, and to offer him the heads of turkeys, bread and drinks of maize. They had to offer him dogs made of pottery with bread on their backs, and the old women had to dance with these dogs in their hands, and to sacrifice to him a little dog with a black back and which was a virgin. And those who were devout had to draw their blood and to anoint the stone of the idol Chac Acantun with it. This service and sacrifice they considered as being agreeable to their god Yax Cocah Mut."

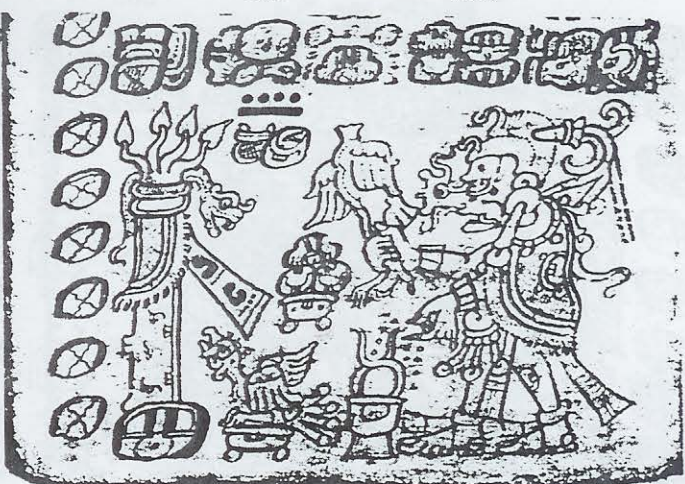
was put in place, the Red Corner Tree of the East,
Red ???, damage to maize, drought

tz'ah Chak lak'in chak ?? nal k'in
Am
Che' tun
abil



was put in place, the Green Corner Tree of the
south, First bread year sustenance.

tz'ah Yax nohol yax K'awilnal
Am
Che' wah
abil



In this third section of the New Years pages the god that had been brought to the house is now taken to a corner tree at the entrance to the town. Landa described this action as "When these unlucky days were passed, they carried the statue of the god Bolon Dzacab to the temples and the image to the eastern side, so that another year they could go and get it there. And they left it there, and returned to their houses, each occupying himself with whatever there was to do for the celebration of the new year," and for the following year, "There were many people who drew their blood, cutting their ears, and anointed with the blood the stone of the god called *Chac Akantun*, which they had there. Here they took boys and drew blood from their ears by force, making gashes in their ears. They kept this statue till the unlucky days had passed and meanwhile they burned their incense to it. When these days had gone by, they took the image to leave it at the north side, where they were to go out and get it on the following year; and they bore the other to the temple and afterwards they went home to engage in the preparation of the new year."

Akantun, "set-up stone," has taken by most researchers to be a stela erected at the four entrances to the town. However, the glyphic text does not record *akantun*, but rather *Yax Amte*, using the head from the Itzamna name to record *am*. *Am* is the name of divinatory stone, but more importantly *amay* is "corner." These stone represent the four corner stones of the world. He are represented as stone trees rising from *ab* or *tun* "stones." They wear a cloak like living beings and have snakes tied around their upper area as a rebus of the *akan* part of the name. The first one is rendered as a Chak head, perhaps as an reference to the positions of the four Chaks in the world direction and to the title *Chak Te* that is recorded both in the Chilam Balam of Chumayel and in the Classic inscriptions. *Kolom Te*, the more frequent spelling of this title, also refers to the world trees.

In each scene the god who is seated in the house on the opposite page holds a decapitated turkey as an offering before the Am Che'. Many people have commented on this pattern and its violation of Landa's description. The bishop described a system in which the gods switched to the next direction. In the Landa pattern the house god on 25 should be with the *akantun* on 26, the house god on 26 should be with the tree on 27, the house god on 27 to 28, and the one on 28 back to 24. Michael Coe (1965) wrote a famous paper showing how Landa's pattern allowed political office and the expenses of rituals to circulate through all four quarters of a town.

Because the Dresden does not match Landa's pattern of circulated, many researchs have assumed the codex to be in error and have suggested various ways to correct it so that it is in agreement with Landa (See Thompson 1972:90) for his solution. Lounsbury prefers to assume that the codex is correct, and as a result he has proposed another system. We do not believe that he has ever published his solutions, but Linda heard it in his 1975 Yale seminar on glyphs, and he presented it informally at the 1979 Dumbarton Oaks Conference.

Floyd noted that the gods exchange positions between pages 25 and 26 and between 27 and 28. He also noted that

was put in place, the Green Corner Tree of the west, the Death God, first year or rain, drought.

tz'ah	Yax	chik'in	??	yax	k'in
	Am		Kimi	abil	tun
	Che'			abil	



was put in place, the Green Corner Tree of the north, first year or rain, Itzamna, surplus of bread and water.

tz'ah	Yax	Na	yax	Itzamna	k'a
	Am		abil		wah
	Che'				ha

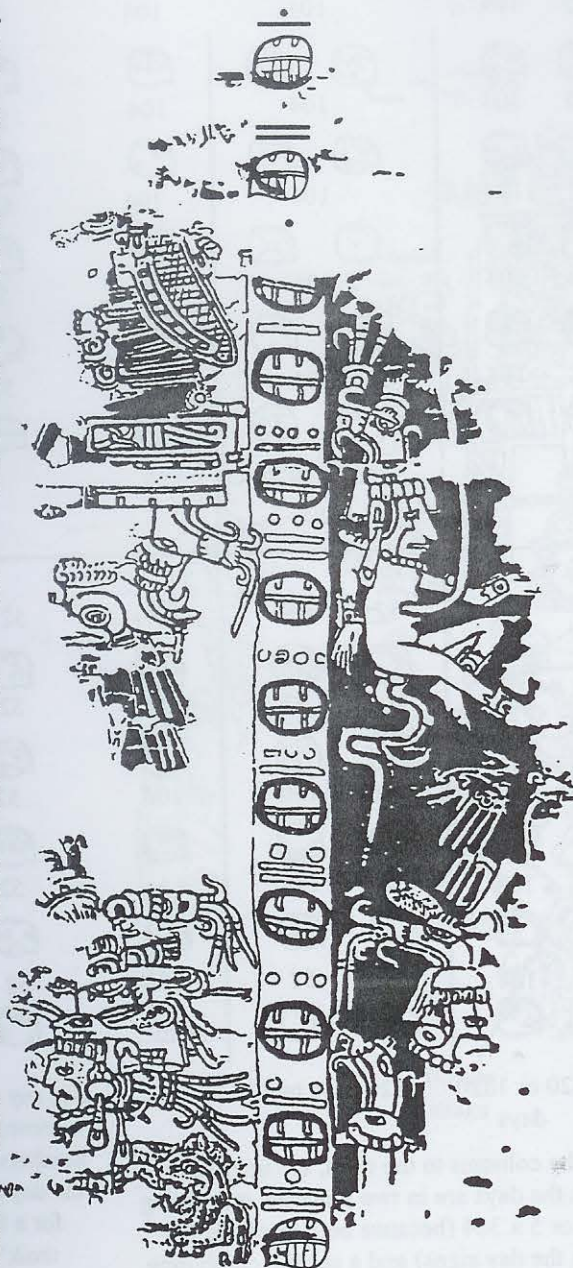


the copal burned in the middle scenes of these pairs of pages also contrast, with female copal on pages 25-26 and male on pages 27-28. Using Mike Coe's ideas that the circulation patterns reflected basic social organization in a Maya community, he proposed that the Dresden pattern came from a community that did not have a true quadripartite organization, but rather one that divided into halves and then further subdivided the halves. He also cited June Nash's study of Amatenango Tzeltal community, *In the Eyes of the Ancestors*. That town has upper and lower moities that are further subdivided. If Floyd is right in his analysis, then the Dresden has parts of it that are more likely to have originated in Chiapas or in an area where towns were divided into two halves that then were subdivided once again.

Other parts of these bottom scenes also hold interest. Once again the offerings vary from page to page and this time numbers are specified. Page 25 has a fish combined with *chak k'in*, a glyph reading *yut*, and a censor with the number 19 above it. *Yut* refers to the stones found in deer stomachs. These stones were used as talisman by the Yukatek Maya. *Chak k'in* is strong sun, but we're not sure how it relates to offering. Finally, the number 19 may refer to the number of copal nodules that were to be burnt.

Page 26 has the number 39 written in a form that Lounsbury (1994) discussed in his analysis of numerical forms in the inscriptions and the codices. The number reads *bolon tu k'al*. As Lounsbury commented, this number should have read "nine to the second score," but in the Yukatek forms the number was deleted for numbers between 21 and 39. Other offerings include *yax wah*, the throwing of *ch'ahalte* into a brazier, and a live turkey in addition to the one that has been decapitated.

Page 27 has *waklahun tu k'al* or thirty-six, three fishes in a plate, and *kay wah* or "fish bread." Page 28 has *holahun tu k'al* or "thirty-five," *kutz wah* or "turkey bread," and a deer haunch or *yok keh*.

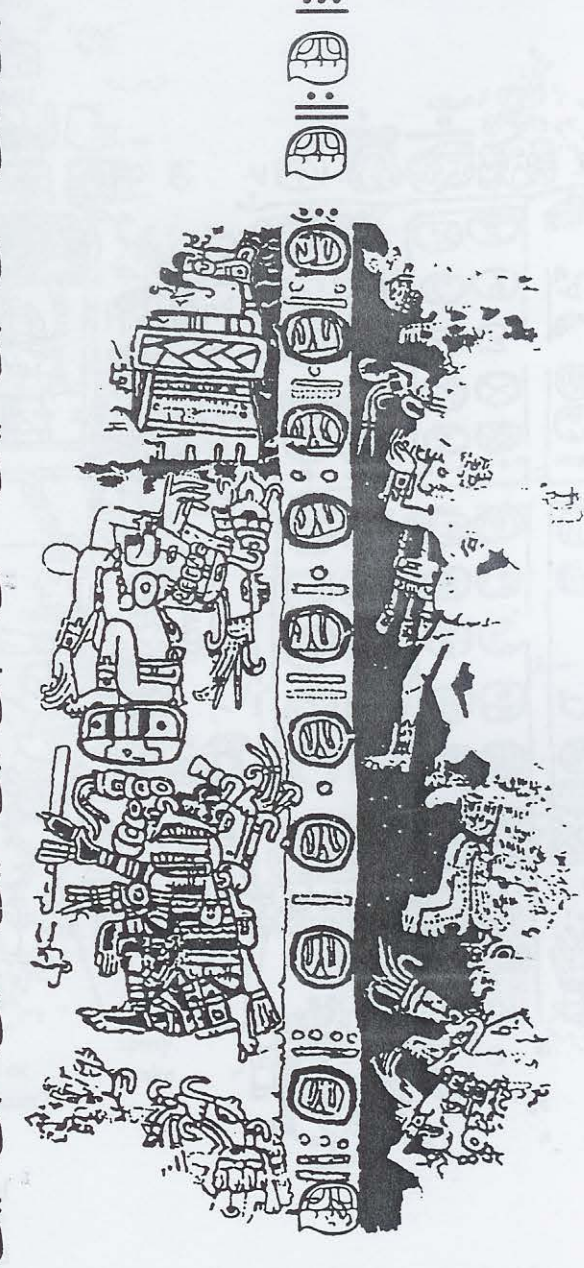


red background
skeletal god sitting on
a sky roof

maize plant
descending from roof

a vulture

the Maize God seated
in front of a jaguar
devouring a person



black background
[missing]

a floating Maize God
with an umbilicus
emerging from his belly

a black bird

the Maize God with a
growing maize plant
behind him



red background
unidentified god sitting
on a roof

a Maize God making
the mourning gesture
as he sits on a haab

bundled figure holding
maize and stick

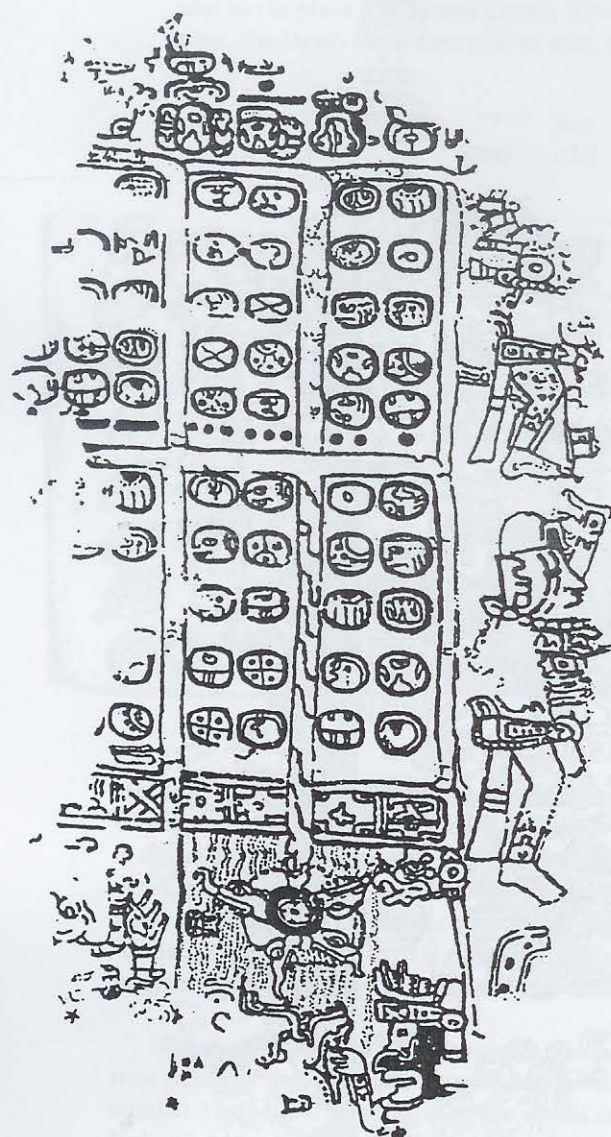
the Maize God doing
something with maize

black background
growling jaguar

Maize God with
mourning gesture

another feline

Maize God with
mourning gesture



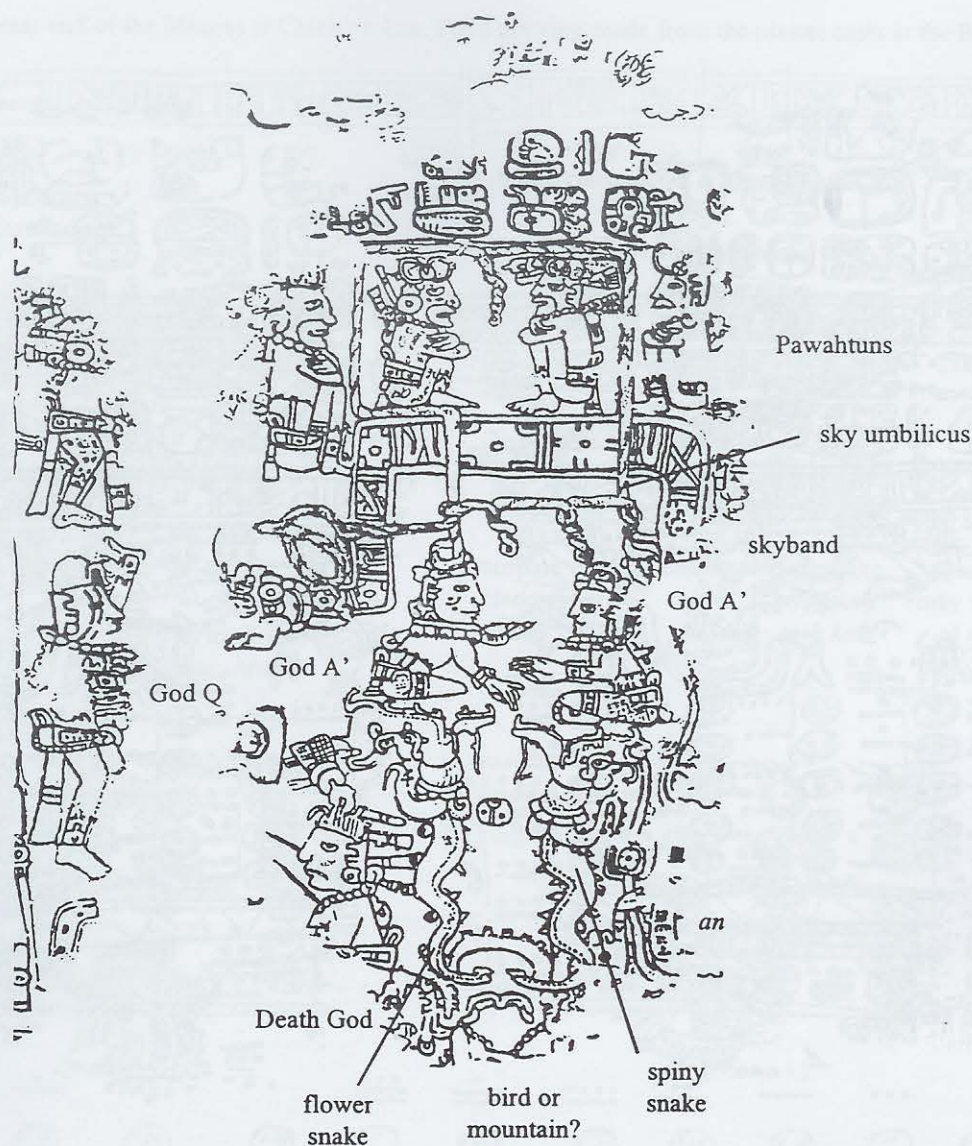
104	52	104	104	104	52
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104	52	104	104	104	52
104	52	104	104	104	52
	</				

In the columns to the right, the intervals between the days are in two patterns, one giving 5 x 104 or 5 x 364 (because both intervals fit between the day signs) and a second combining 156, 156, 52, 104, and 52 to give 520, which is a double tzolk'in.

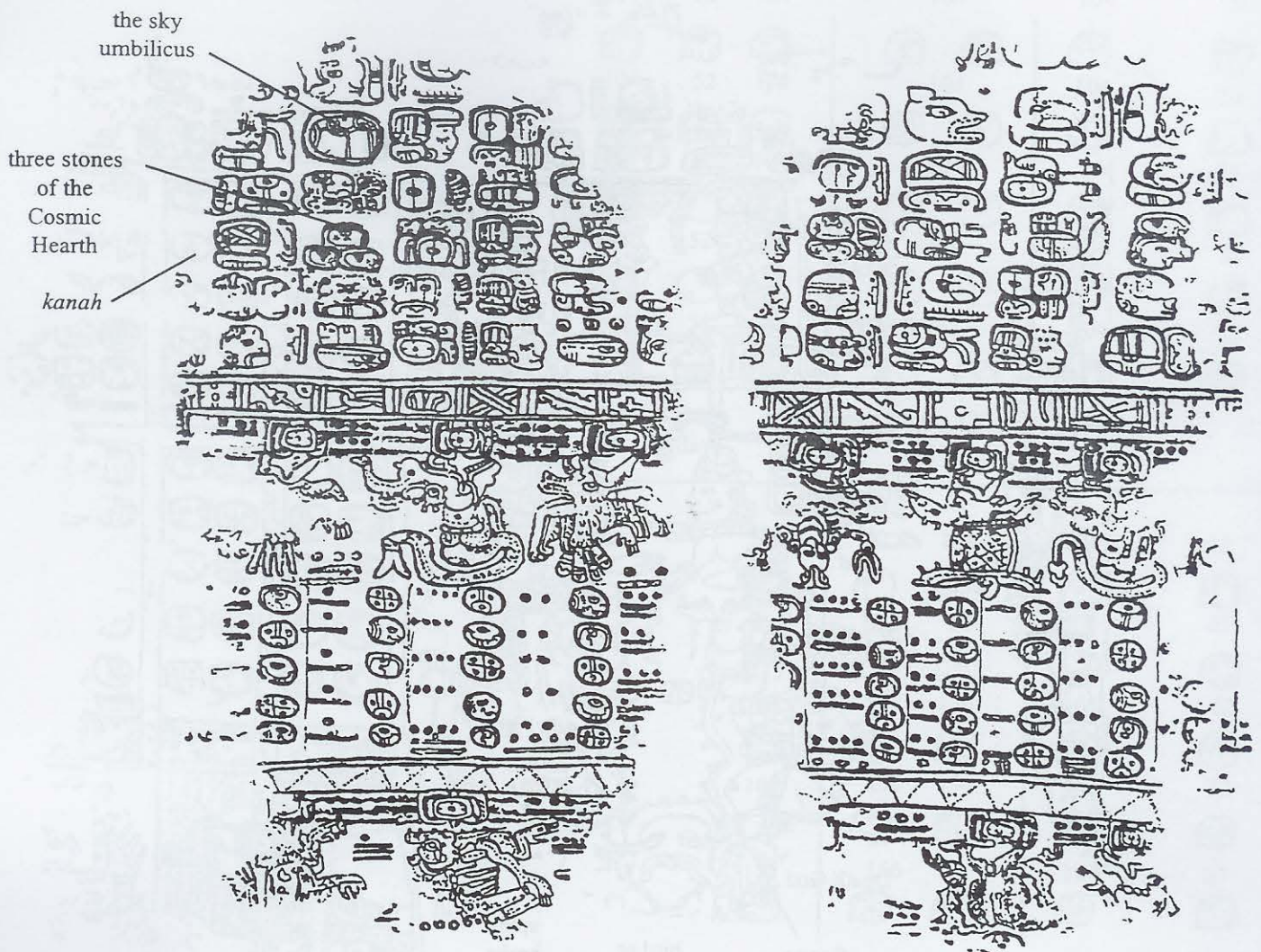
Use any of the recorded numbers with the day signs for a full tzolk'in

This section of the Paris pages arrange the days in the order they have in this new Creation. All columns count from the bottom upward, with the numbers in the middle of the page used with any of the columns (See Love 1994:78-79) for a full description of these tables and the history of their decipherment. The other columns with intervals of 104 days accumulate 520 days or if intervals of 364 days are used, then 1820 days. 1820 is the critical cycle that precedes the New Year pages in the Dresden, and 520 days figure prominently in the construction of eclipse tables. Two other columns accumulated irregular intervals for a total of 52. The day sign columns sit in a lattice made up of twisted cords or umbilical cords. They may come from the belly of the dead Maize God in the Ben day section of the previous pages.

The flood is here also—in the scene below the dates. It shows a huge rain storm falling from a sky band onto a sun-filled ancestor cartouche. Next to the cartouche is a glyph reading *tok* that Love interpreted as *tok chak*, "a fierce and brief downpour." *Tok* also means "to burn," and a seated figure, perhaps a death god (according to Taube [1988] and Love [1994] holds a torch. A coiled snake rear up below the sun and an old god stands next to it. Love (1994) identified it as God D, but it has feathers in its headdress, identifying it as God L, the same old god who brings on the flood in the Dresden. See Bruce Love's analysis of this same section.



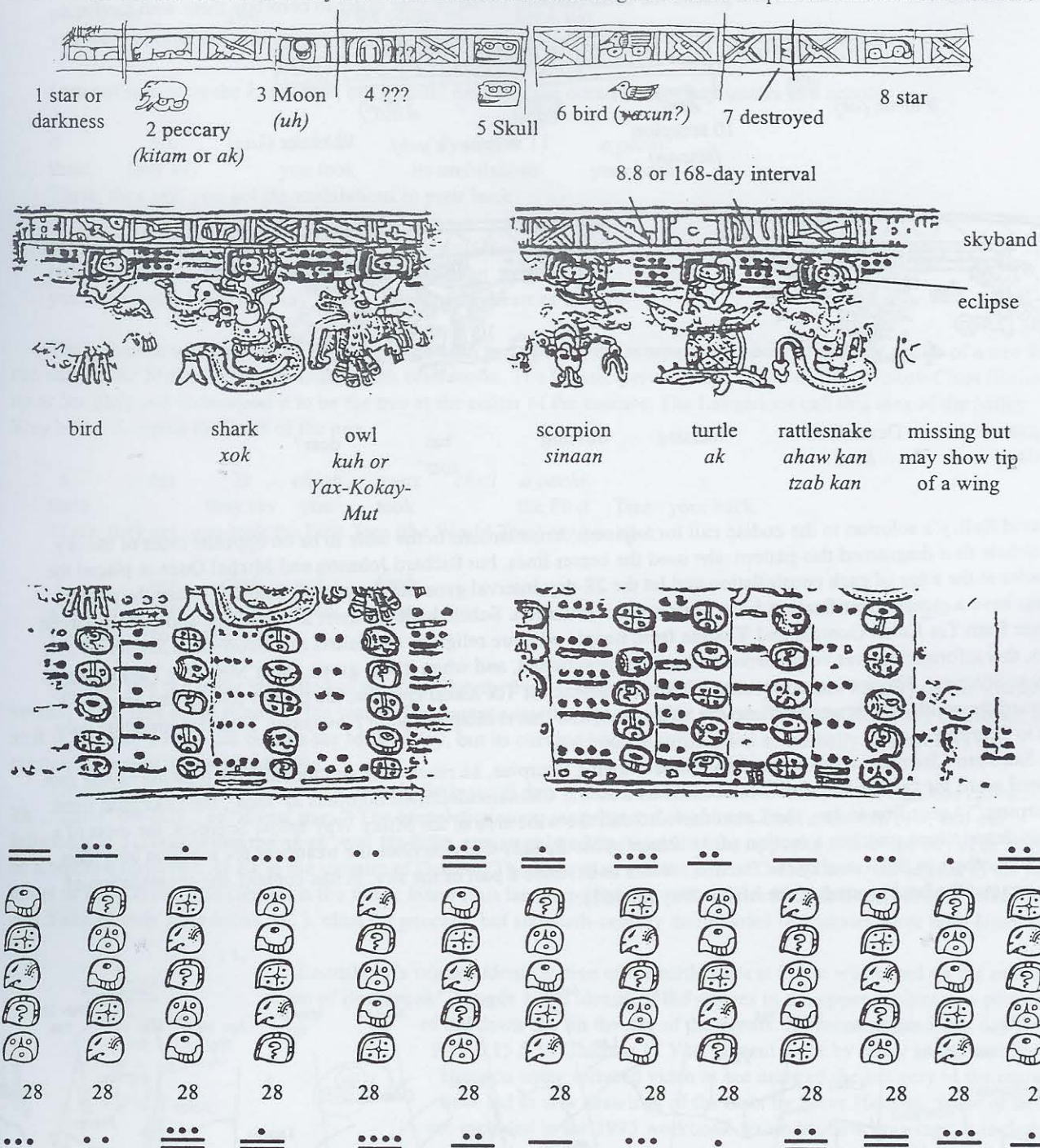
This scene shows the preparation for ordering the new cosmos. At the bottom of the scene a frontview head with a bird beak emits two snakes from its eyes. It wears a beaded necklace, but I wonder if it is not an image of snake-mountain. Two versions of God A', anthropomorphic death gods, sit above the open mouths of the serpents. Above them a sky band arches across the scene intermeshed with the sky umbilicus that Arthur Miller first identified at Tulum. Four Pawahtuns sit above the skyband and the entire scene seems to be flanked at the four corners by another fourfold set of gods. They are painted green, but the only one that is complete has the face markings of God Q. Love commented on the number column to the left of the snakes. This kind of number tree symbol has the value an in the inscriptions. Here it may refer to counting as Love suggested, but it may also be referring to the beginning of existence in this act of creation. This section prepares for the reordering of the cosmos that follows in the subsequent pages.



The texts at the top of these two pages have not been deciphered, but there are components that let us know that they concern Creation. These texts are written in mirror image. On page 25, we have a glyph with the intertwined cords from the scene on the previous page. This labyrinth of umbilical cords also identify Na-Ho-Kan, the place where the first throne of the Cosmic Hearth was set up. The hearth is two glyphs below followed by the sky sign which a verbal suffix. The name glyph of Itzamna, the god who set up the Water Throne Stone in the hearth, sits between these two glyphs.

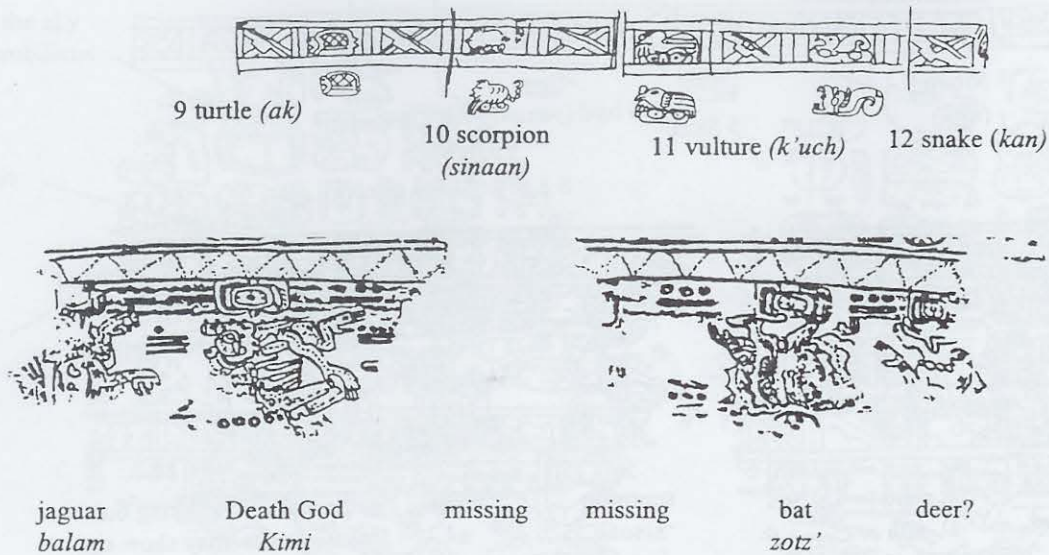
These two pages show the zodiac with various constellation animals hanging a sky band or a snake body. Scholars have been working on these pages for a long time, beginning with Seler. We follow the pattern first proposed by David Kelley. However, Bruce Love and Victoria Bricker have proposed different solutions that you can check in their work. Dave Kelley's solution used two properties--that each animal hangs from an eclipse sign and that in the upper set an distance number of 8.8 or 168 days sits between the eclipse sign. Kelley realized that 168 approximates the 177-day eclipse interval. The interval in the Paris is not, of course, the precise eclipse interval, but Dave noted that sequential eclipse stations occur in constellations that are opposed to each other across the zodiac. He suggested that the constellations that are next to each other represent opposite positions on the zodiac, and pointed out that the base date of this section and that of the Dresden eclipse table are both 12 Lamat. We follow his interpretation as the correct one.

Zodiac from the east end of the Monjas at Chich'en Itza. Field drawing made from the plaster casts at the British Museum



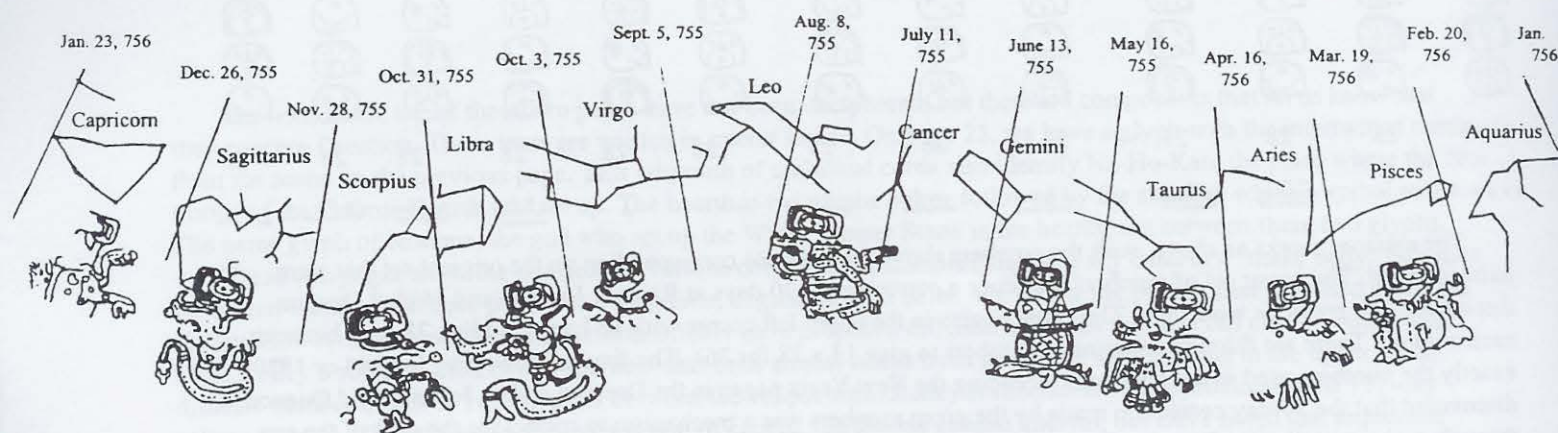
The almanac works as above, with the numbers above the columns corresponding to the original set that were painted in red. The lower set of numbers introduce a correction of 20 days as Richard Johnson and Michel Quenon discovered at a previous workshop. The count begins in the upper left corner with 12 Lamat, adding 28 days between each column. There are thirteen columns of numbers to give 13×28 for 364. The five full rows give 5×364 or 1820, exactly the numbers used in the almanacs preceding the New Years pages in the Dresden codex. Johnson and Quenon discovered that the 20-day correction made by the green numbers was a mechanism to correct for the drift of the sun through each constellation. Running through the full almanac once produces an error of 8.2 days. Running through it three times gave an error of 18.6 days. The correction of twenty days brought the two back into closer alignment, but more importantly, it move the sun from the trailing edge of the constellation to its leading edge. Bricker and Bricker (1992) suggested that this correcting device added on seven days and was applied every other run of the almanac. Both mechanisms produce the same result. The sun stays in the same constellation.

Kelley began with the bird (6) and placed the constellations in the reverse order to correlate them with the Paris.



David Kelley's solution to the zodiac call for adjacent constellations in the table to be on opposite sides of the sky. When Schele first diagramed this pattern, she used the center lines, but Richard Johnson and Michel Quenon placed the boundaries at the edge of each constellation and let the 28-day interval generate the pattern below. To start the pattern, one must have a secure identification for at least one constellation. Schele believes there are two. She and Nikolai Grube have data from Tix Kakal Guardia and Yaxuna from people who are religious specialists that Scorpius is *Sinaan Ek'*. At Yaxuna, this information was volunteered without being solicited, and when it was given, the h'Men Don Pablo pointed directly at Scorpius. There were at least ten witnesses present. At Tix Kakal Guardia, the person told us that *Sinaan Ek'* was toward the south, that it was far from the turtle stars, and that it disappeared in November. That last condition only applies to Scorpius.

At San Juan Chamula, when a man saw Linda drawing Scorpius, he reach over and touched the drawing saying *tzek*, the Tzotzil word for "scorpion." Jon McGee told us that Old Chankin identified Scorpius as *loch'*, the Lakandon word for "scorpion." According to Jon, the Lakandon also call the wide area of the Milky Way below Scorpius, the roots of a tree. This descriptions matches a section of the *Ritual of the Bacabs* that describes the treatment for scorpion bite. This section, like others in the *Ritual of the Bacabs*, seems to describe a part of the sky, in this context the constellation of Scorpio against the background of the Milky Way (p. 161).



The lines represent the position of the sun at twenty-eight-day intervals beginning with a position on the west edge of Scorpius. The thirteen zones approximate the zodiacal sequence used by the Precolumbian Maya (based on a chart calculated by Richard Johnson and Michel Quenon).

pichin¹¹ *tech* *tan* *k'ula*
 poured out you in the center of the *k'ula*
 you were poured out into the center of the *k'ula* (holy water?)

I am not sure what the *k'ul a* was, but it could be either the ocean or the deep waters of a cenote.

ti *bin* *a ch'ah* *u yamulil* *a pachi*
 there they say you took its undulations your back
 There, they say, you got the undulations in your back

pichin *tech* *bin* *tan* *yol che*
 poured out you they say in the center its heart tree
 you were poured out, they say, in the center of the heart of the tree

The reference was obscure to Roys, but it clear to me. *Sinaan*, the scorpion, was poured into the center of a tree that can only be the Milky Way in its north-south orientation. The Classic-period Maya called this the *Wakah-Chan* (Raised-up or Six Sky) and understood it to be the tree at the center of the cosmos. The Lakandons call this area of the Milky Way below Scorpius the roots of the tree.

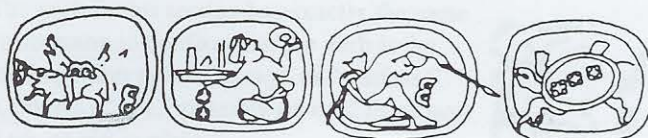
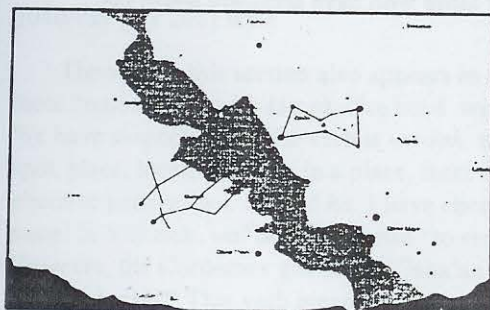
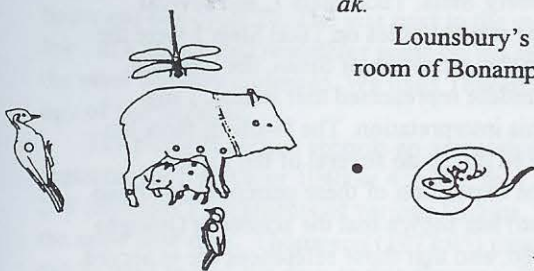
ti *bin* *ta* *ch'ah* *u yax* *cheil* *a pachi*
 there they say you took the First Tree your back
 There, they say, you took the First Tree (the World Tree) at your back

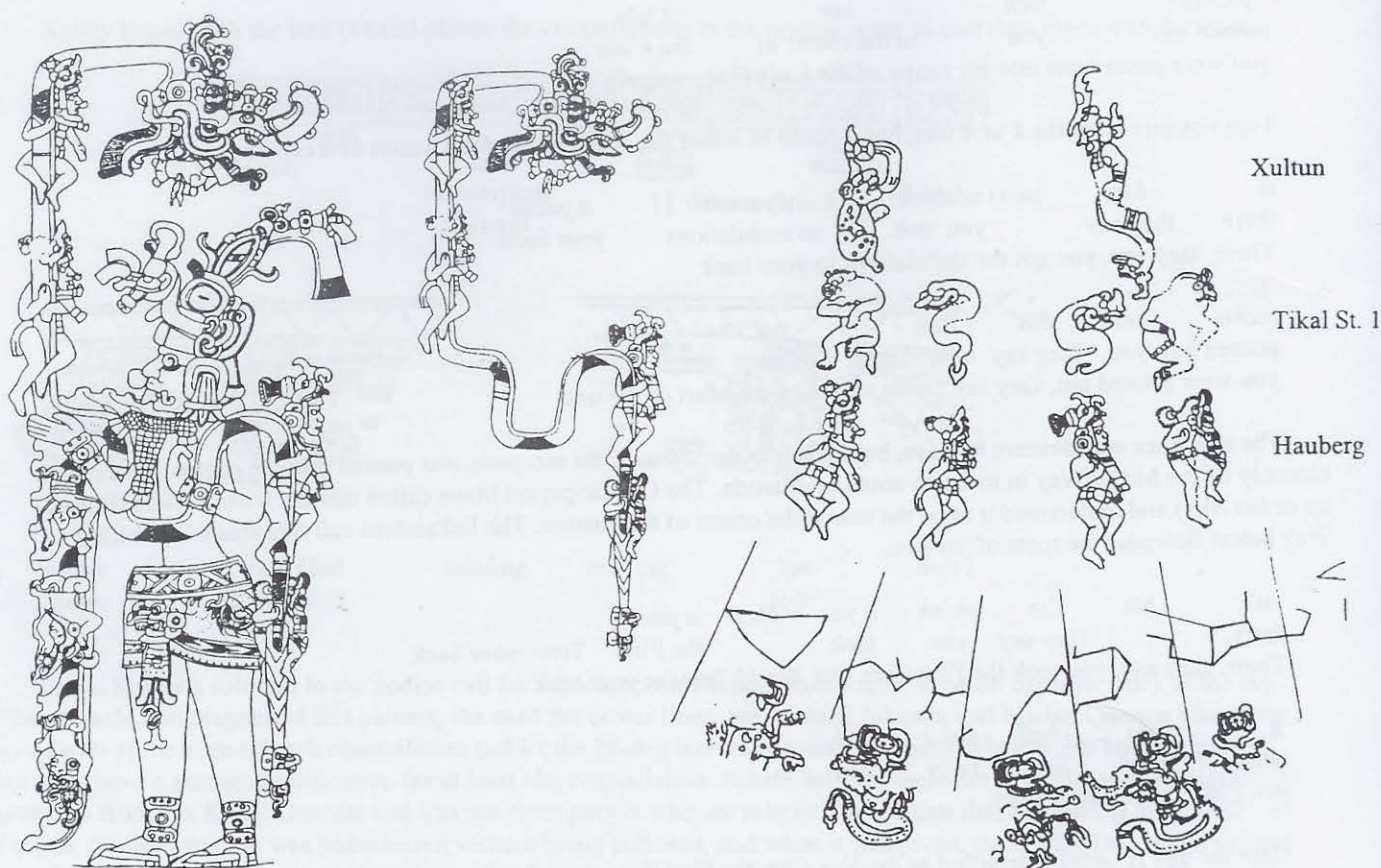
a *yax* *cheil* *nak'i* *kech*
 you First Tree belly you
 you First Tree as your belly

Here the tree is clearly identified as the Yax Che, the First-Tree, or ceiba that many sources identify as the Yukatek version of the tree at the center of the world. The passage say that the Yax Che is at the back and the belly of *Sinaan*, and so it is. Scorpio's head lies outside the Milky Way, but its curving body is surrounded at the belly and back by the crystalline beauty of the Xibalba Be.

The other constellations for which there is fairly good data is that the area around Gemini and Orion was called *Ak Ek'*, "turtle" peccary," or "dwarf stars." The Motul dictionary says that the *ak ek'* was three stars in a row, and our informant at Ti Xkakal that the *ak ek'* was far from *sinaan ek'* and he pointed to the opposite side of the sky. The Maya of Komchen identified *Ak Ek* in the vicinity of Gemini. The Lakandon call the belt of Orion *kitam*, the nebula in the *yal kitam* or baby *kitam*, and Gemini is the father *kitam* (this last identification comes from Jon McGee). Modern Lakandon and Yukatek only have *kitam* and *k'eken* for peccary, but sixteenth-century dictionaries of Yukatek have both *kitam* and *ak*.

Lounsbury's original identification of the turtle stars at Orion was based on the middle room of Bonampak' Temple 1. He identified the images in the upper register as a picture of the dawn sky on the day of the events. He reconstructed that day as 9.18.0.15.5 13 Chichan 13 Yax. Recent work by Mary Miller and Steve Houston using infrared video to see more of the imagery in the murals have led to new drawings of the texts by Steve Houston. Some of these are included in the 1995 workbook. From his new drawings, it is clear that Floyd's reconstruction was incorrect. The month in Houston's drawing is fairly clearly a Ch'en and the day sign is either Ok or Men. It ends up that in the time of the Bonampak events--786 to 799, depending on the day sign, the month Ch'en fell into our month of July. 8 Ok 8 Chen (91715.12.10), Houston's reading of the date, fall on July 10, 786. The other possibility is 9.18.8.15.15 8 Men 8 Ch'en (July 7, 799).





During the entire month of July, the constellations of Orion and Gemini sit above the horizon at dawn. The printout on the previous page shows the sky on July 10, 786 at dawn. The pattern of the constellations fit the picture at Bonampak just as well as they did for Floyd's date. The only part of the image that is not as well explained are the two central anthropomorphs. In 1992, I suggested they represented the planets of Mars and Saturn that were sitting between these two constellation on Floyd's date. On the new date, only Venus sits in this zone, but it was not at one of its important stations. The sky look approximately the same on July 7, 799.

The other support for Kelley's solution to the zodiac comes from the Hauberg Stela, Tikal Stela 1, and several monuments at Xultun. Werner Nahm first noticed that the animals climbing the serpent poles on Tikal Stela 1 were the same animals in the same order as the Kelley solution to the Paris Zodiac, with the exception of Sinan, the scorpion. Werner suggested that the scorpion was not included because the king in the middle represented that station. I suggested that he represented the tree as the Milky Way, but otherwise accepted his interpretation. The Hauberg Stela has the same pattern of animals, and as Michel Quenon and Richard Johnson worked out so do several of the Xultun monuments, although the pattern was used in a slightly different way. Since the exposition of these pattern in 1992 and in *Maya Cosmos*, Matthew Looer (see the 1996 workbook and his dissertation) has shown that the scribes at Quirigua regular referred to the pattern of the sky on the night of the events they recorded, and that those references are in accord with the Kelley pattern. I have found the same relationship between the iconography of the stela and altars at Copan and the dates recorded on the associated texts. The case is not absolutely proven, but those who have seriously tested the pattern have found it very productive.

12.19.19.11.19
13 Kawak 7 Keh

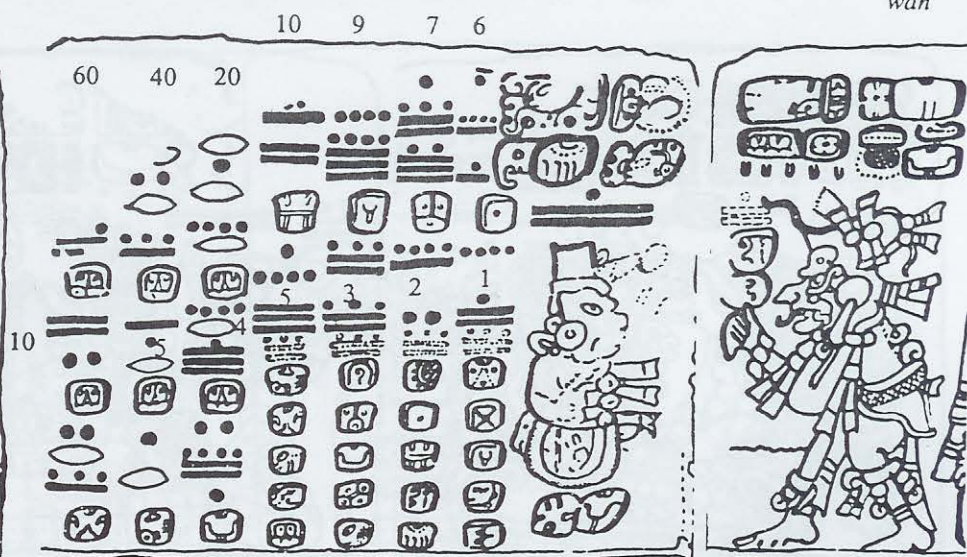
A table of 11 x 91 days, the accumulations of 364 days.

walah	ta	Chak	Chak
	?k'u?		Ha
a	Chak	Ak'ab	k'a
	Xib	K'in	k'u
			wah

12.19.19.17.3
13 Ak'bal 11 K'ayab

12.12.17.3.1
13 Imix 9 Wo

80?



8.16.3.13.0
13 Ak'bal
11 Yaxk'in

10.6.10.6.3
13 Ak'bal
1 K'ank'in

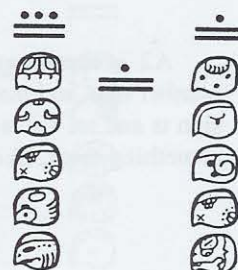
8.16.14.9.3
13 Ak'bal 16 Pop

2	1	11	base date	start in the upper right corner, read right to left across each row.	set up	at holy	Chak	great or red water
					water	Chak Xib	night day	surplus of holy maize

This almanac is another that counts cycle of 364 day, this time in groups of 91 days. The base dates are set up with three ring number dates, yielding two cycle 8 bases and one cycle 10. The text next to the cycle 10 distance number include u lok', in a phrase that resembles some on the serpent number phrase that introduce the other 364-day almanacs. We used Thompson (1972) to reconstruct the chronology of this almanac.

The pictorial section records an associated almanac that tracks 208 days segments for 5 x 208 or 1040 or 4 x 260, four tzolk'ins. This almanac breaks the 208 days into 17 segments of various lengths. This table and the 364-day table use the same base date. Thompson (1972:95) proposed a way that the day sign table can be used to find the days in this almanac. These two almanacs do overlap where they have common multiples at 20 x 364, which equals 28 x 260 or 7 runs of the 1040-day (5 x 208) table.

The verb in this section also appears in 819-day count phrases and in association with the erection of stelae. In these contexts, the verb (an ok-like head with a "chuwen" glyph in place of its eye) has a *wa* prefix and *la-ha* suffixing. We have suspected that the verb is *wa-lah*, the Cholti verb *wa'al*, "standing, stood up, erect or erected, perpendicular, spot, place, locality, be, be in a place, there is (are)." The verb in this section has exactly the same phonetic pattern--*wa. la. and ha*. I have checked my Fostermann to confirm that the verb is the same. In Yukatek, *wal* does not mean "to erect" or "stand up," but rather "to say" or "confess." However, the Cordemex glosses *wa'laha'an* as *parado, puesto en pie*, "possibly derived from *wak*, "cosa enhiesta." This verb means "to be erected, stood up, or put in place."



walah xxxx

xxxx

?? tun

sa

ul

walah

bolon bolon
tat ?? ha

yax
wah?

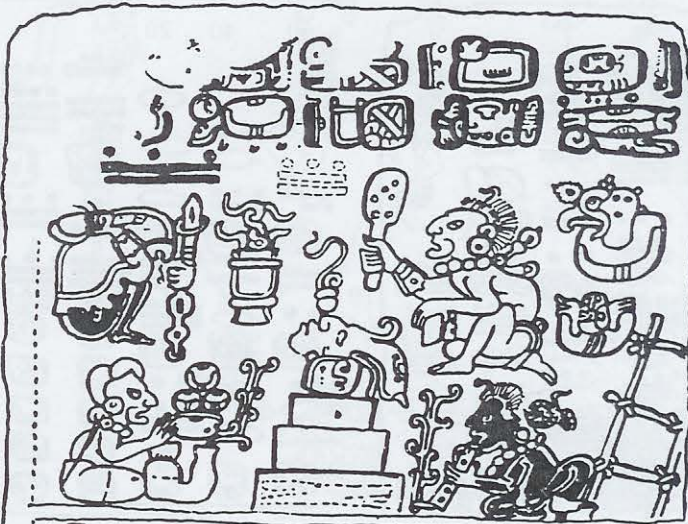
????

wah

u tut

Yax
Chak

bakwa



set up xxxx

xxx

??
stone

atole

atole

9 thick
stuff

9 ??
water

first

xxx

tortilla

his
gift?

Blue
Chak



A2 is composed of the number nine and the phonetic sign ta and to. Tat is glossed as something thick, like atole.



Tut in the form of *tatal* appears in the texts of the Temple of Inscriptions at Palenque where it is something given or not given at k'atun endings. Here "gift" or "offering" would be particularly appropriate. However, in Yukatek *tut* means "to visit."

The scene in the first segment shows Chak standing in front of a bundled person with *chak wah* under it. The bundle may represent a funerary bundle holding an ancestor.

The second scene shows two beings sitting on a cenote or "hole" symbol. The person on the left holds a bag of some sort, while the one on the left pulls up on a rope. A smoking brazier and a fish float between them, and a strange head, perhaps a bird, hovers at the extreme right. Perhaps the two glyphs with the nine prefixes describe this location.

The third scene is quite amazing. A pyramid sits in the middle with an earth sign and severed maize god head perched on top. These are likely offerings. To either side musicians, one a drummer and one a flautist, play music. A decapitated body carrying a staff and fan in its hands squats in the upper left corner, opposite a man who holds up a strange paddle. Offerings of a copal censer, a plate of tamales, a turkey tamale, a iguana tamale, and a ladder sit in the background.

walah yotoch bolon tut
ta ha

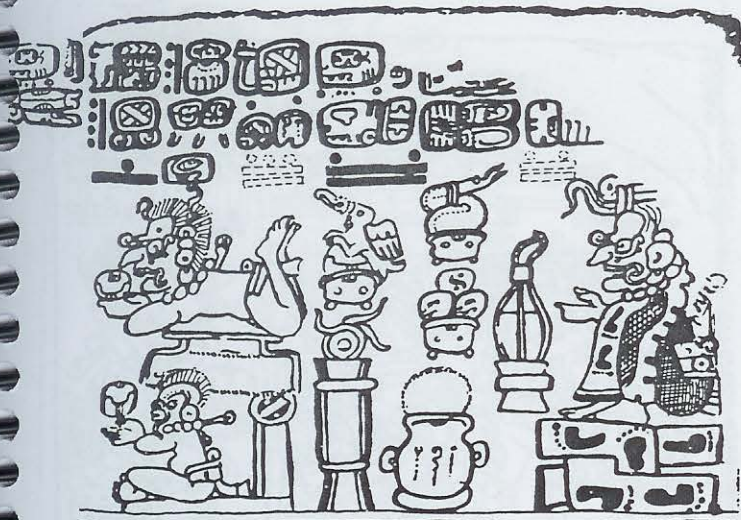
bakwa bolon k'in hun kan
tat ak'ab hun kab

walah ti beh

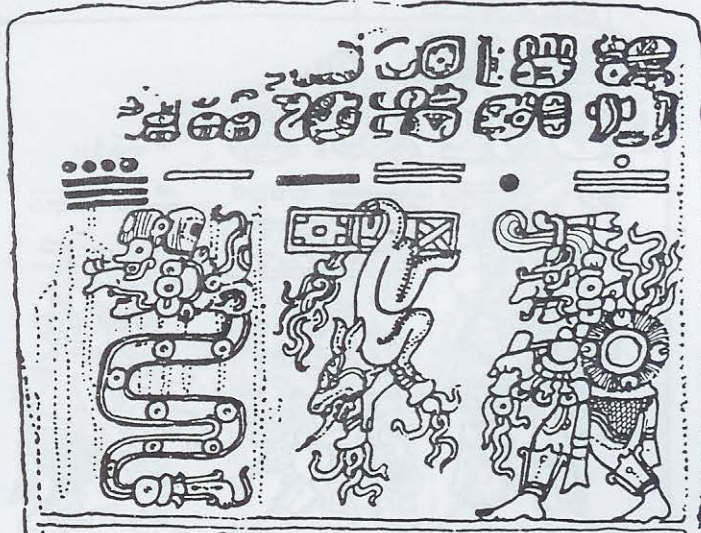
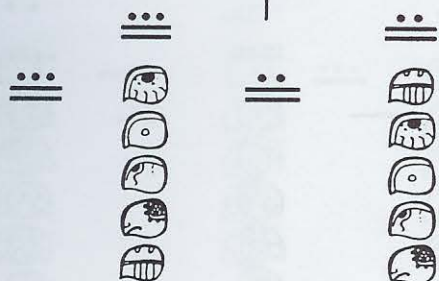
Chak su-pi Chak
su-kuk? Ha

k'ak wa-be u tok ti kan
???

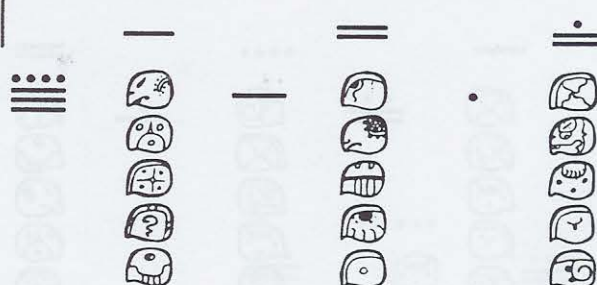
???? k'a wah lob k'ak te Chak ch'akah
ha tun?



et up his 9 ta gift? he is in the
house water road
bone 9 thick day one Chak ??? red
female stuff night sky water
one
earth



xxxx xxxx fire ??? he burned in the
??? surplus of bad fire to chak chop up
food food wood and things
stone



The text for the first scene above begins on the previous page. It shows God C, K'u, sitting in a house as Chak lies belly down on the roof. Both carry *wah*. The second scene shows Chak seated on a road with many offerings in front of him. These include hummingbird bird, a deer haunch, a plate full of *kimi* signs, a lugged vessel holding something foamy (perhaps a fermented liquid; Thompson identified it as *balche*), a tall incensario, and a rope bundle of some sort.

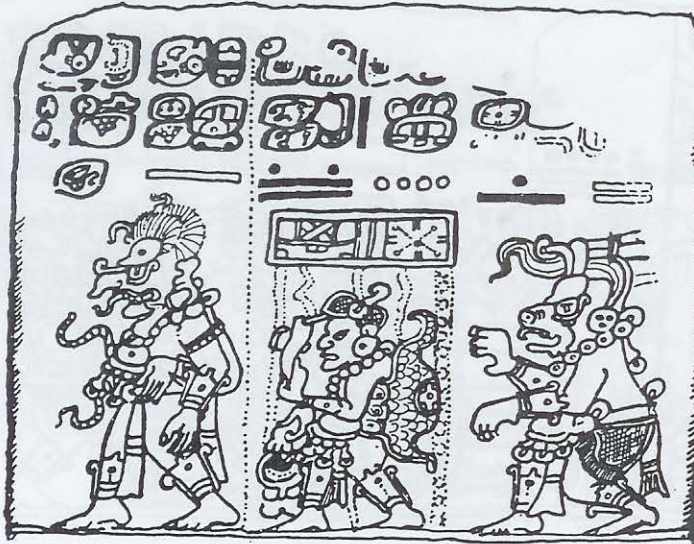
The third scene shows a Chak-headed snake with rain falling behind, but the text is destroyed except for the augury of a surplus. The fifth scene shows a dog holding torches as he hangs from a sky band. The verb includes "fire" and may refer to the burning of the sky in drought. Certainly the divinations are bad. The final scene shows Chak carrying a torch. The verb is *u tok ti kan*, "he burned it in the sky." The divinations is the verb for "chop up" or "decapitate."

chukah Chak lub

yatan? Chak ek' kan
muyal

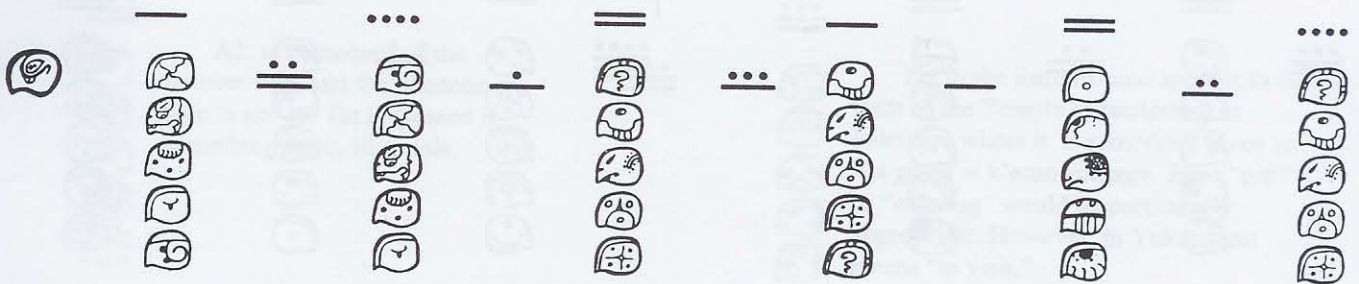
k'ak' k'in kakabah Ho k'in
te tun tun Pawahtun ak'ab
abil

???? Chak k'a wah Chak ox wil
Chel ha



was Chak rest ???
captured
fire to drought dark Five day
wood Pawahtun night
and
stone

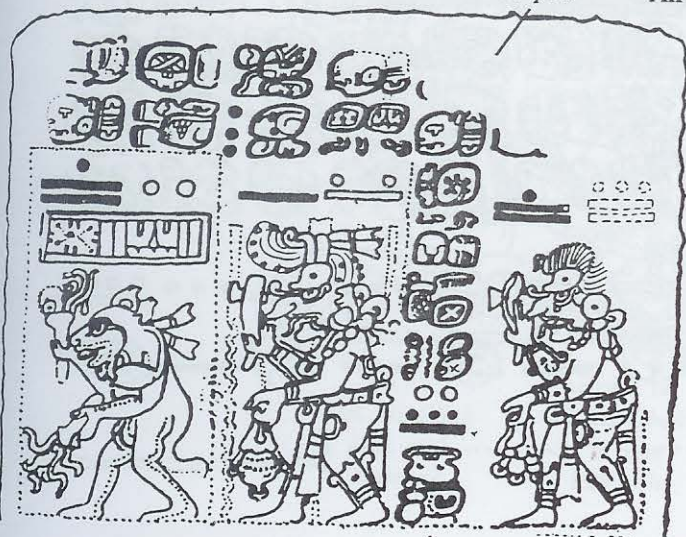
married Chak black sky
cloudy
Chak surplus of Chak much
Chel food food



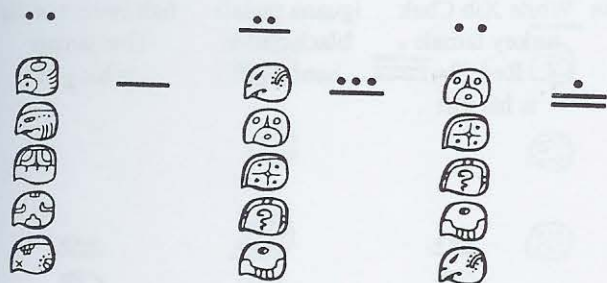
The text that goes with the second scene above begins with *lub*, "to rest." The third glyph in this same text read *kab-kab-ha* or *kakabah*. The Codemex glossed *ka'kab* as "suelo pardo obscura." The scene shows a Pawahtun standing under a rainy sky.

xxx

???-tzu	kan	?? kan	Chak	Chak	Chak
				Yax bul	first beans
Chak	k'ak'	ox wil	k'in	k'a wah ha	surplus of food
	te tun		ak'ab	tu kat	for his pot
				ah pak	Ah Pak



???	sky	?? sky	chak	ut be	it happened on the road
Chak	fire to wood and stone	much food	k'in ak'ab		

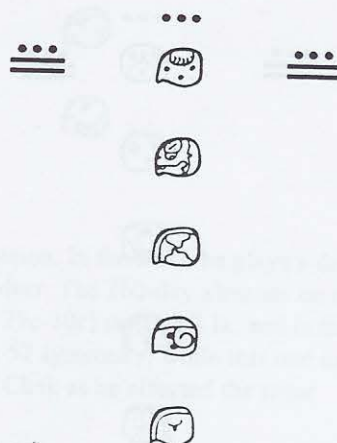


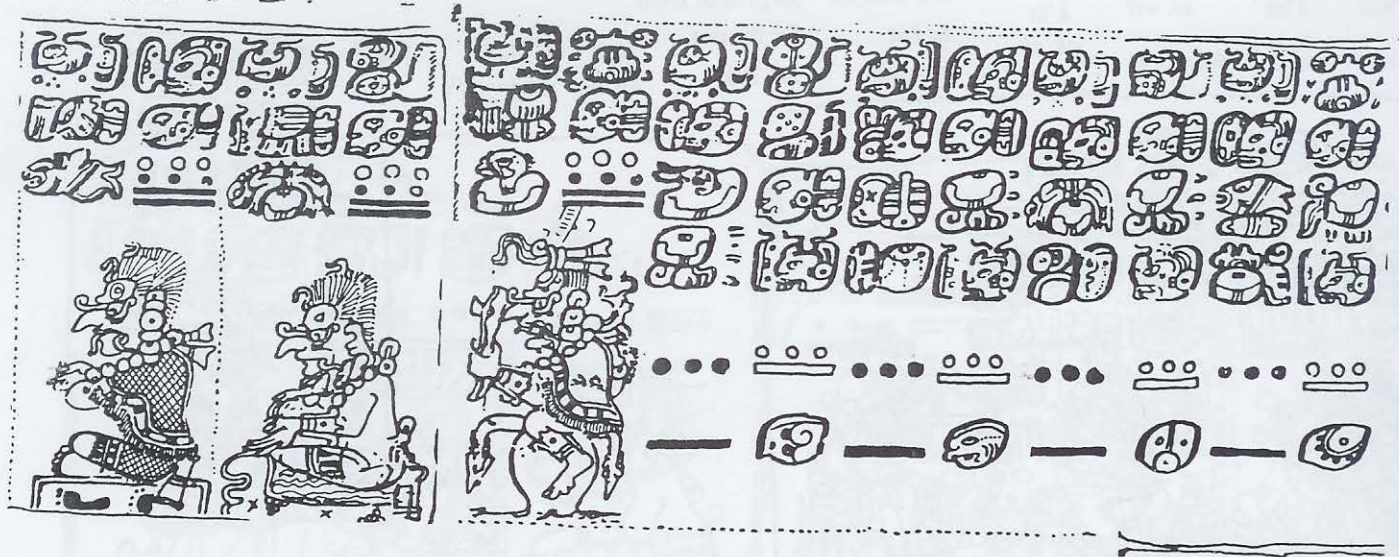
Chak carries bags in the last two scene. Bags very much like these show up in the murals associated with the ballcourt at Chich'en Itza.



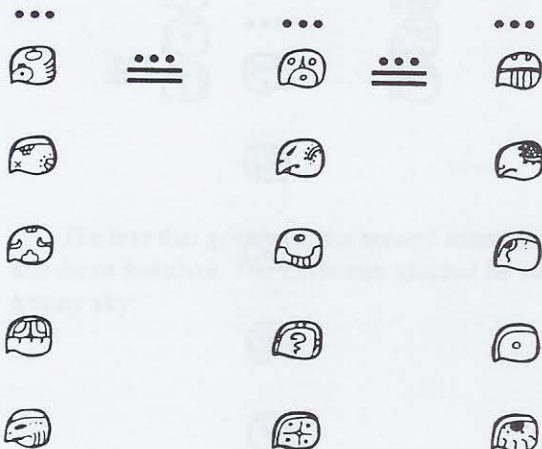
walah lak'in
Sabak Chak
kay wah

he is in the east
Sooty Chak
fish tamale





walah Na Sabak Chak kay .	walah.chik'in Sabak Chak huh wah	walah nohol Sabak Chak kutzh wah	walah lak'in Chak Xib bil ka keh wah Chak wah u sih	walah Na Sak Xib Chak kutzh wah chak tzi u sih.	walah.chik'in Ek' Xib Chak huh wah ek' pa kab sih	walah nohol K'an Xib Chak kay ki wah yax wah u sih
he is in the east Sooty Chak fish	he is in the west Sooty Chak iguana tamale	he is in the east Sooty Chak turkey tamale	he is in the east Red Xib hairless calabash deer tamale Chak wah is his gift	he is in the north White Xib Chak turkey tamale Red ?? is his gift	he is in the west Black Xib Chak iguana tamale black stolen honey gift	he is in the south Yellow Xib Chak fish sweet tamale first tamale is his gift



Several of these offerings pose problems. *Bil* is glossed as "hairless dog" and things that have no hair, while *ka* is "edible calabash." We suspect it is a calabash that has been cleaned. One of the offerings is *chak tzi*, but we could find no foods listed under *tzi*. The last offering is *kay ki wah*. *Ki* is "something sweet." It may refer to the fish, but this tamale is a *yax wah* and presumably made with elote or newly harvested corn. From personal experience with know that tamales made from this kind of corn is very sweet.



an na
Sak Xib Chak
kutz wah
balche?

an chik'in
Ek'Xib Chak
k'ik' che
huh wah

an nohol
K'an Xib Chak
kay wah
yax-k'an-k'ik'

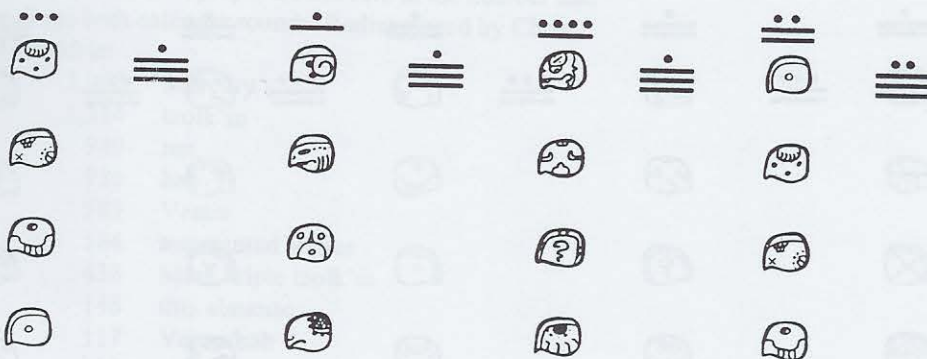
an lak'in
Chak Xib Chak
yax k'an k'ik',
keh

He exists in the
north White Xib
Chak
turkey tamale
balche

He exists in the
west
Black Xib Chak
rubber, iguana
tamale

He exists in the
south Yellow
Xib Chak
fish tamale
first yellow
rubber

He exists in the
east Red Xib
Chak
first yellow
rubber, deer



In the first scene, Chak rows a canoe. In the second he squats over a hole or depression. In the third, he plays a drum that he holds between his legs, and in the fourth, the jabs his spear down at a captured deer. The 260-day almanac on our previous pages occurs immediately above this one. Both these almanacs (29b-30b and 29c-30c) start on 3 Ix, and both take Chak through the four directions. However, the almanac in register b uses the 5 x 52 symmetry, while this one uses a 4 x 65 pattern. It is as if the scribes contrasted the different symmetries and action of Chak as he effected the same tzolk'in.



xxx xxx
chak abte
Chak

xxx xxx
sak abte
Chak

xxx xxx
ek' abte
Chak

xxx xxx
yax' abte
Chak

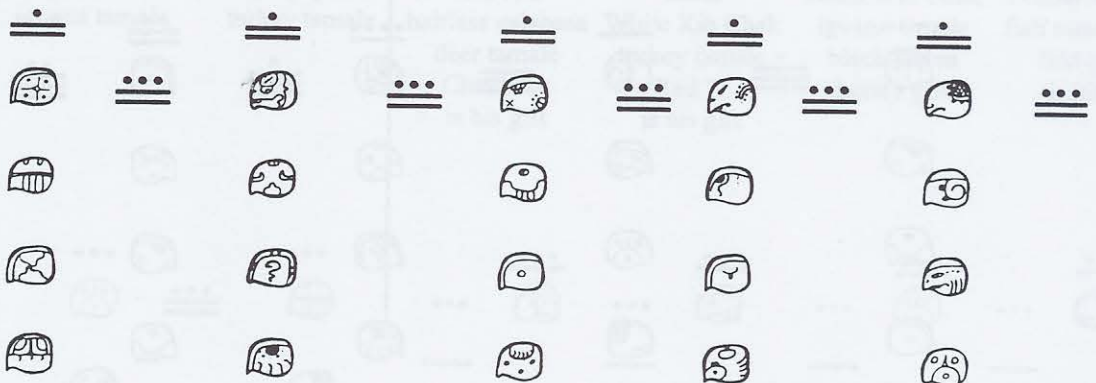
missing
Red year tree
Chak

missing
white year tree
Chak

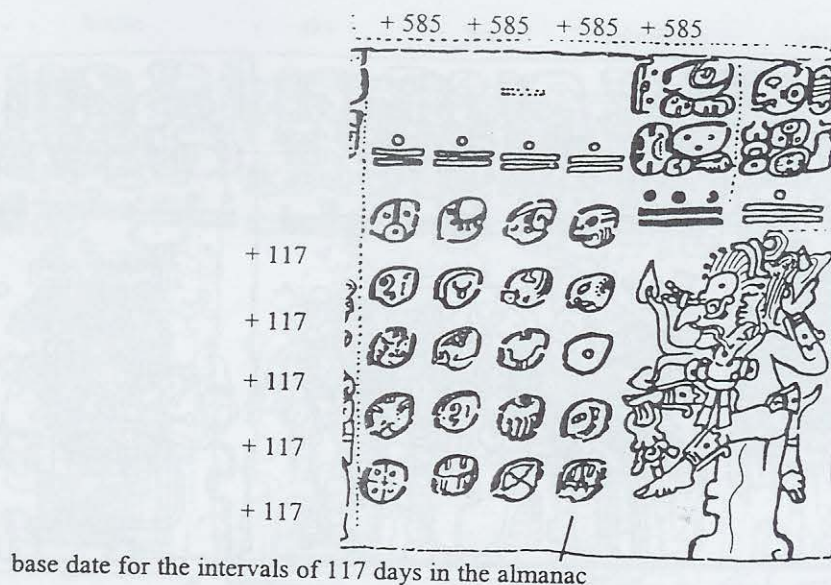
missing
black year tree
Chak

missing
[Yellow year tree
Chak]

missing
blue year tree
Chak



Chak holds either a white flower glyph or a rearing snake in the first scene. A lugged jar sits at the base of the tree. In other scenes this jar held a foamy substance identified as balche. In the second scene a dog shares the tree with Chak. The fourth scene shows Chak's tree as a ceiba, and in the fifth scene shows him in a cave that must represent the center of the earth as the fifth direction. Thompson (1972:94) identified the glyph at the base of the case as *yol kab*, but it looks more like *kab ti* or "earth in the cave." The Forsterman copy we have scanned for this presentation records the trees with the appropriate color and then T548 *ab* and *te*. *Ab* is the glyphic form of *hab*, year, so that these world directional trees seem to be specified as ones that also concern time. Since the tzolk'in is evenly divided, the diviners seem to be tracking the tzolk'in through its four quadrants and the center.



u anwa
Chak
Chak che'
ti lak'in

Victoria Bricker (1988) first identified this almanac as "The best compromise for commensurating Mercury and Venus periods with the Maya tzolkin." The table consists of a the synodic period of Mercury plus one day (116 +1) counted twenty times to give 2,340 days. This number is also 4 x 585 or Venus + 1 as well as 9 x 260. These last numbers brings the almanac back to the same tzolk'in position with the same lord of the night. Chris Powell has gone on to show how these symmetries work to commensurate other cycles as well. 2340 is 3 x 780, the synodic cycle of Mars, and 2,340 is the lowest common multiple of all these cycles. 2,340 also play a crucial role in the number that commensurates tun endings with calendar rounds. Rediscovered by Chris Powell, 2.7.9.0.0 or 341,640 is:

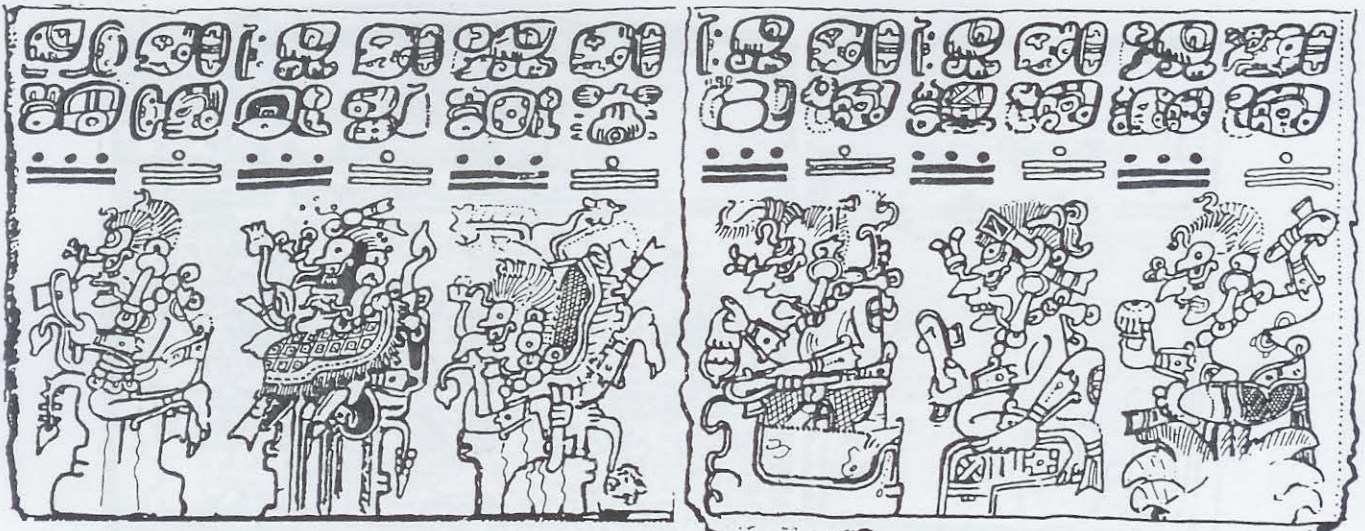
he is there
Chak
 Red tree
 in the east

117	x	2,920	Mercury
260	x	1,314	tzolk'in
360	x	949	tun
365	x	936	hab
584	x	585	Venus
585	x	584	augmented Venus
780	x	438	Mars, triple tzolk'in
2,340	x	146	this almanac
2,920	x	117	Venus/hab
18,980	x	18	calendar round
37,960	x	9	grand Venus

2,340 or 6.9.0 is also the number used to correct the Venus table, because the subtraction of this number retains the same day in the tzolk'in while correcting the table by four days.

The verb is a locational one that goes with scenes of Chak in different locations. Phonetic complement suggest that it reads *an*, "to exist," although in Classic period texts it has the value *ch'am* or *ch'ab* and on the Dresden Venus pages it seems to be *ak'* or *k'a*. If the verb is *an*, it has transitive inflection in this almanac





ani
Chak
Sak hab
nal

u anwa
Chak
ek' che'
chik'in

anwa
Chak
ti k'an che'
nohol

u anwa
Chak
k'u ??? ah
k'u

u anwa
Chak
ti kan k'u

anwa
Chak
ti nak'??
k'u

he was there
Chak
White tree
north

he is there
Chak
black tree
west

he was there
Chak
at the yellow
tree
south

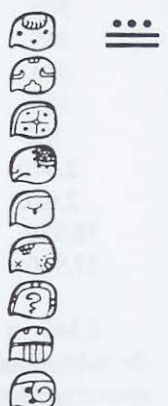
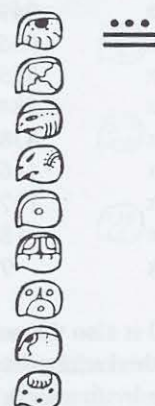
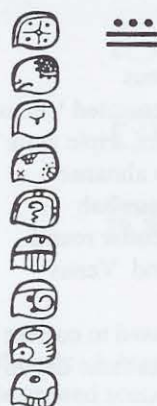
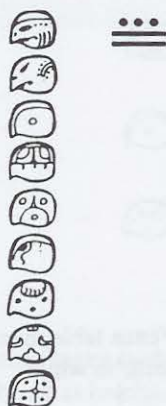
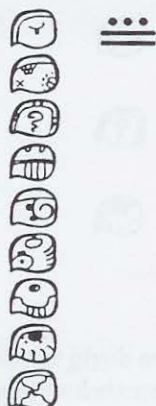
he was there
Chak
????
god

he was there
Chak
in the sky
god

he was there
Chak
at the end
god



etc.



Each set of days goes through the intire twenty day signs.

house

sky

water

mountain

rain



u anwa
Chak
tz'ite
yax na ok

u anwa
Chak
ti chikah
menel ahaw

an mu
ti nah
Chak
kun chi

u anwa
wak ??? Ahaw
Chak
??? ha

u anwa
Chak
pa ha
nal

u anwa
Chak
ox nat
mach

u anwa
Chak
???
wal ti

he is there
Chak
??? tree
first house
base??

he is there
Chak
in the under-
brush
maker lord

he is in the
building
Chak
????

he is at the ???
Chak
???? water

he is there
Chak
water tank
place

he is there
Chak
three ???

he is there
Chak
???
seated at



65 days

house

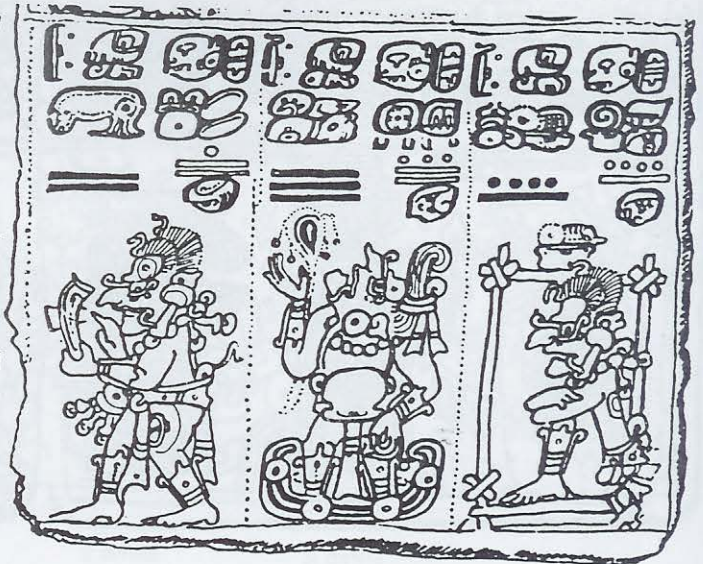
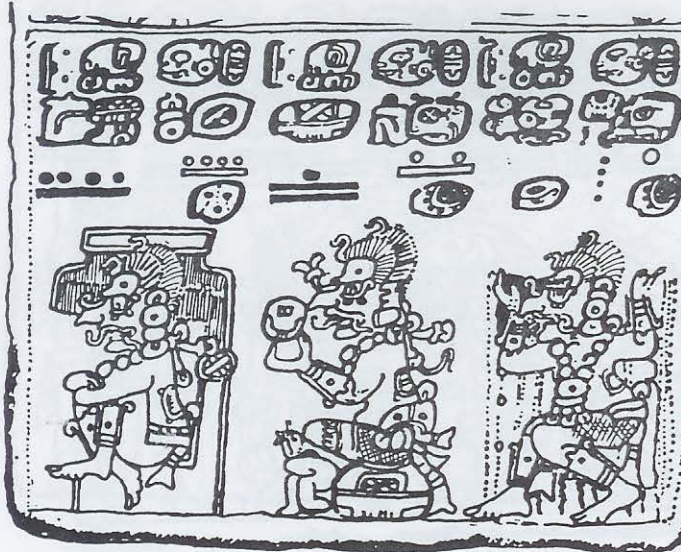
sky

water

mountain

rain

house



*u anwa
Chak
yotoch
ti tan*

*u anwa
Chak
kan
wa-wal*

*u anwa
Chak
och na
ha ??*

*u anwa
Chak
???
sak nu*

*u anwa
Chak
bul k'ab
k'in-ak'ab*

*u anwa
Chak
ch'a te
k'ik' yotoch*

he is there
Chak
in his house at
the center

he is there
Chak
sky seated

he is there
Chak
sustenance
rain

he is there
Chak
fish
white ??

he is there
Chak
floods
day-night

he is there
Chak
in the scaffold
rubber his
house

....

..



=

==

....



65 days

sky

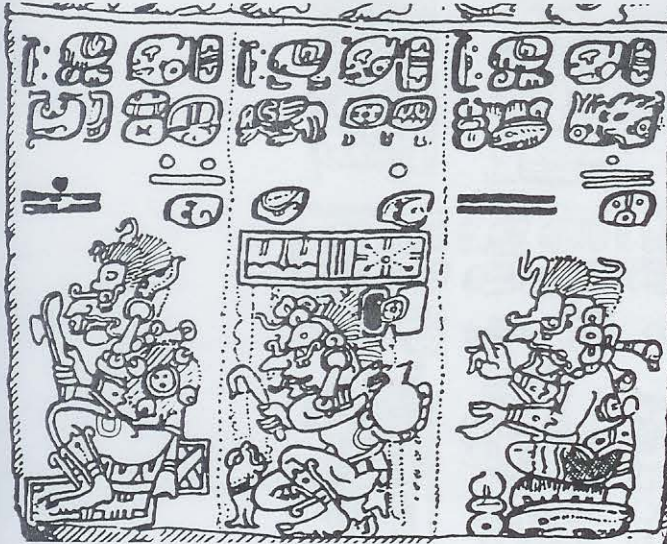
water
rain

mountain
valley

rain

house

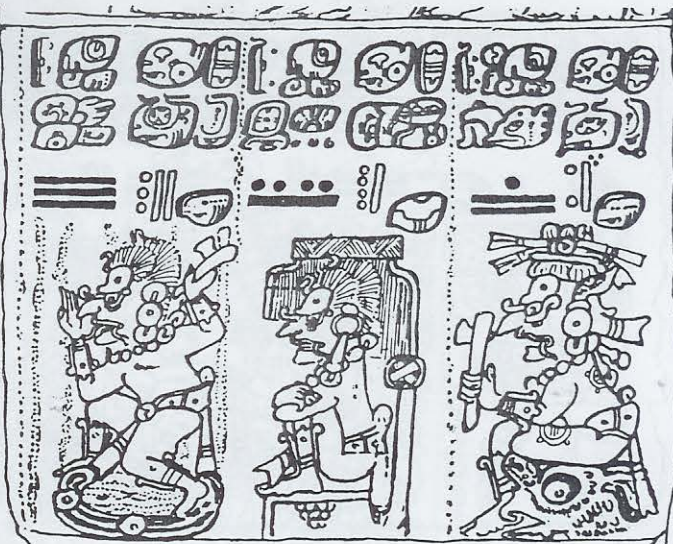
sky



*u anwa
Chak
walah
ab ahaw*

*u ani
Chak
k'uch
k'in-ak'ab*

*u anwa
Chak
ti hem
kelem*



*u anwa
Chak
bul k'ab
walah*

*u anwa
Chak
k'in-yax
bu yotot*

*u anwa
Chak
wa kan
walah*

he is there
Chak
seated at
the royal stone

he is there
Chak
vulture rain
day-night

he is there
Chak
in the valley
youth

he is there
Chak
floods
seated

he is there
Chak
day first
?? his house

he is there
Chak
seated sky
seated

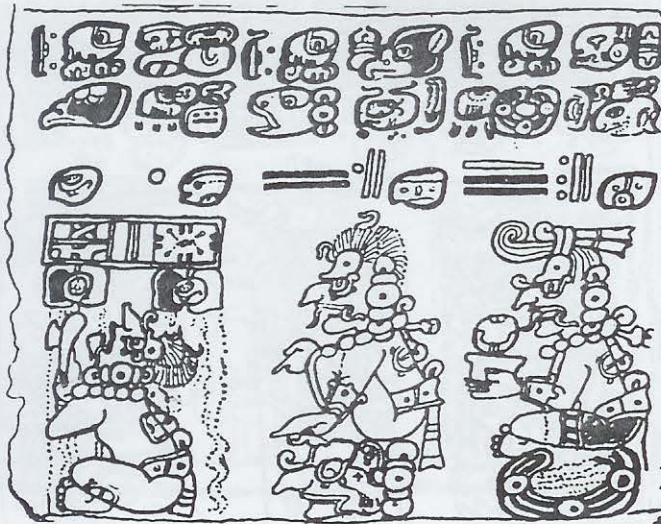


65 days

water

mountain

rain



*u anwa
ul nam
ti
ha nal*

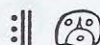
*u anwa
ti
witz
walah*

*u anwa
Chak
ha ???
nal*

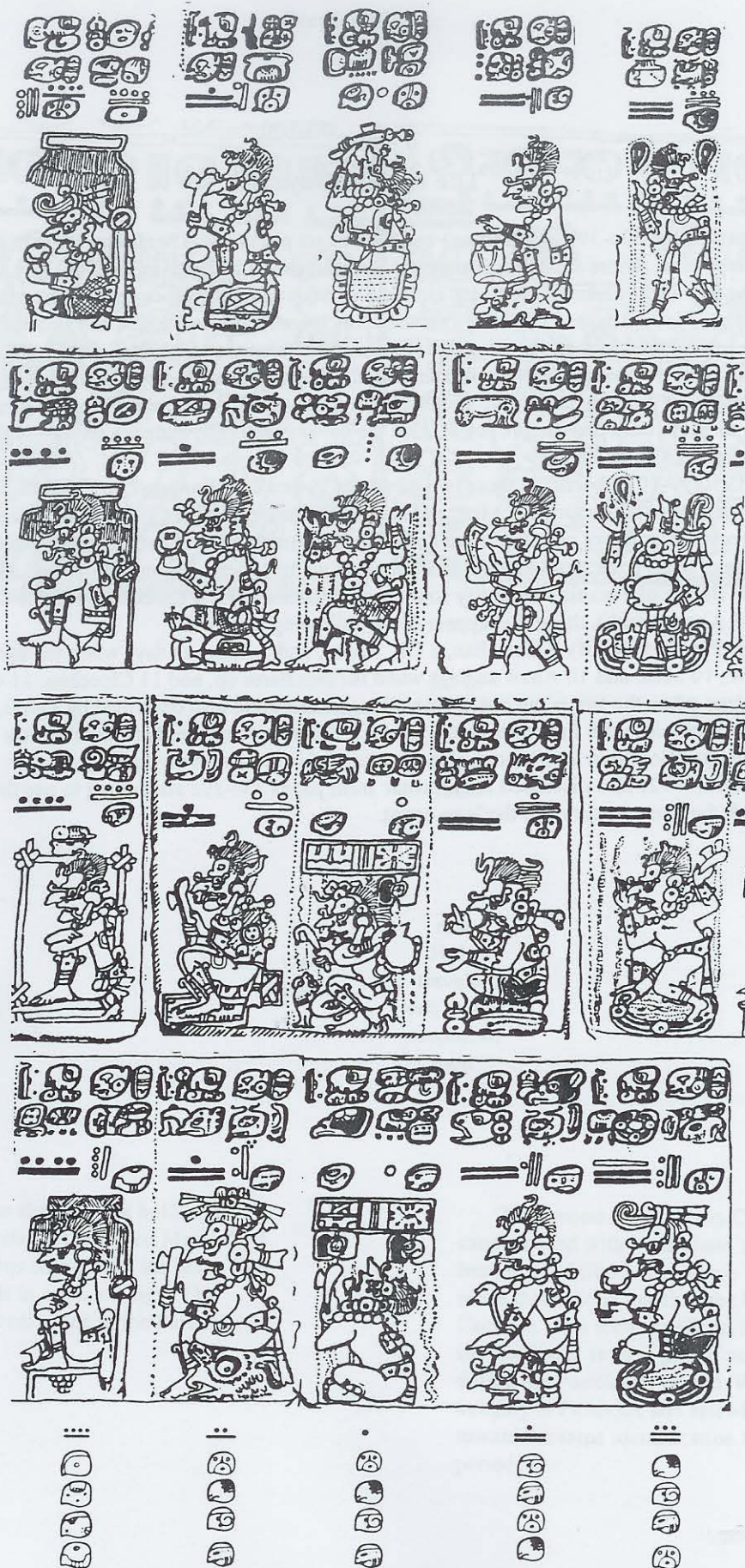
he is there
arrived on high
in
rain

he is at
the mountain
seated

he is there
Chak
water hole
place



65 days



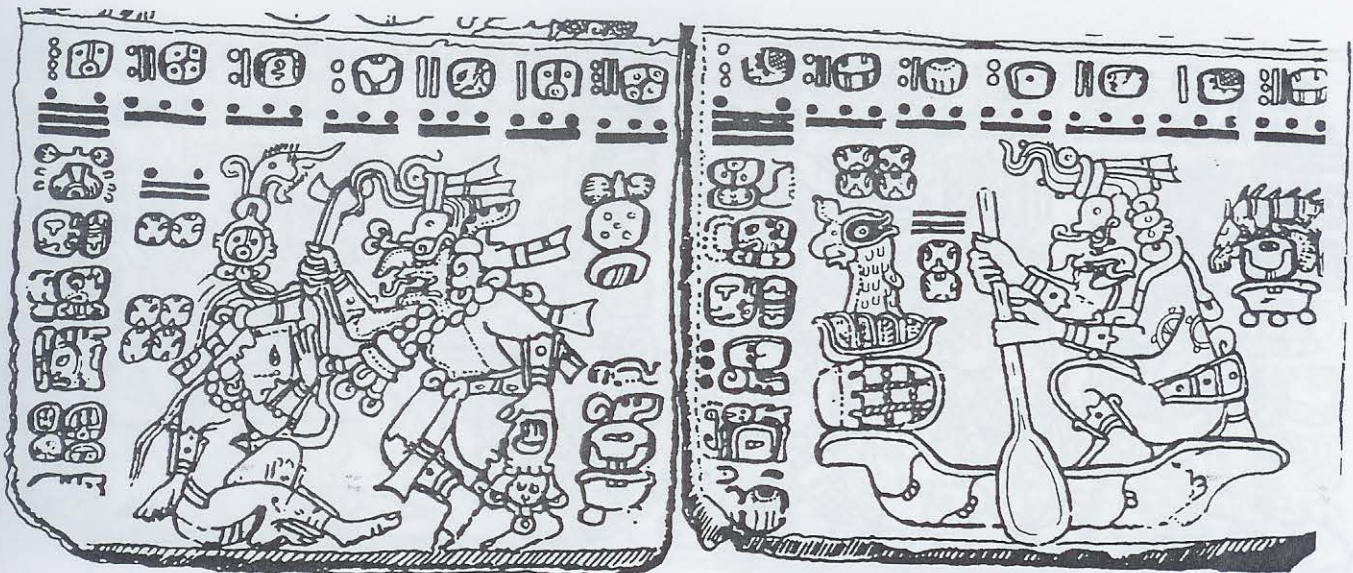
The Burner Days

The almanacs on page 33c-39c (preceeding) and the one on pages 42c-45c (following) are divided into four units of 65 days each. These almanacs feature the days Ahaw, Chicchan, Oc, or Men. The almanac on page 33-39c to the left displays the full 260-day almanac without using the repetitions of the other arrangements in the codices. Vicky Bricker (1992:77) first used this layout to illustrate how the structure works. The full 260-days are sub-divided into 65-day segment that have the same set of intervals (9, 11, 20, 10, 15). The pictures associated with each of these intervals are related, showing themes involving houses or other structures; the sky; water containers or rain; mountains or valleys; and a final one with rain or water holes. Dresden 42c-45c displays only one picture for each of the 65-day intervals, but each 65-day segment begins with 4 Ahaw, Chikchan, Ok, or Men..

Thompson (1950:99-101) discussed these two almanacs in detail. Following Long's work, he associated them with the burner days--Chicchan, Oc, Men, and Ahaw--that appear in the Chilam Balams and Landa as days on which special ceremonies with fire were held. The days mentioned in these sources were separated by 20, 20, 20 and 5 days to give the same interval of 65 days as we have here. Thompson quoted a Roys translation of the Chilam Balam of Tizimin to identify four specific burner days: 4 Chicchan (east); 4 Ok (north); 4 Men (west); and 4 Ahaw (south), those that appear in the following almanac.

He quoted Pio Perez to identify 3 Chicchan, 3 Ok, 3 Men, and 3 Ahaw as days when the fire is taken, and 10 Chichan, 10 Ok, 10 Men, and 10 Ahaw as days when the fire flares up, and 11 Chicchan, 11 Ok, 11 Men, and 11 Ahaw as days when the fire is put out. Fire-walking rituals were also described by Landa, but perhaps these Yukatekan ceremonies with fire relate to the *yahaw k'ak* title documented at Chich'en Itza and sites in the south like Palenque. Southern inscriptions also mention *puluy* events involving fire.

Victoria Bricker (1992) also discussed the almanac from pages 33c-39c attempting to use the pictures of the eclipses to lock the almanac down in the long count.



nohol
Chak
k'u ok
Nal
k'in tun
abil
???

ma bel
no road or
work?

lak'in
k'u ok
Chak
ox wil
Hunal
k'a wah ha

hu wah
iguana
tamales

south
Chak
holy
traveler
Maize God
drought

wah
tamales

east
Holy
traveler
one maize
surplus of
food

This first scene shows Chak holding a bag and holding an ax above the seated Maize God who has an umbilicus rising from his belly. The umbilical cord ends in a *sak nik* sign. This parallels the umbilical scene in the Paris New Years pages.

The second scene shows Chak paddling a canoe loaded with a merchant's bundle. The headdress of God L sits on top the bundle in a scene that exactly matches the God L scene at Cacaxtla. This scene confirms that the Maya also saw as God L as their god of merchants, at least during the Postclassic period. We think that the imagery at Palenque and elsewhere also points toward the same identification for the Classic period.

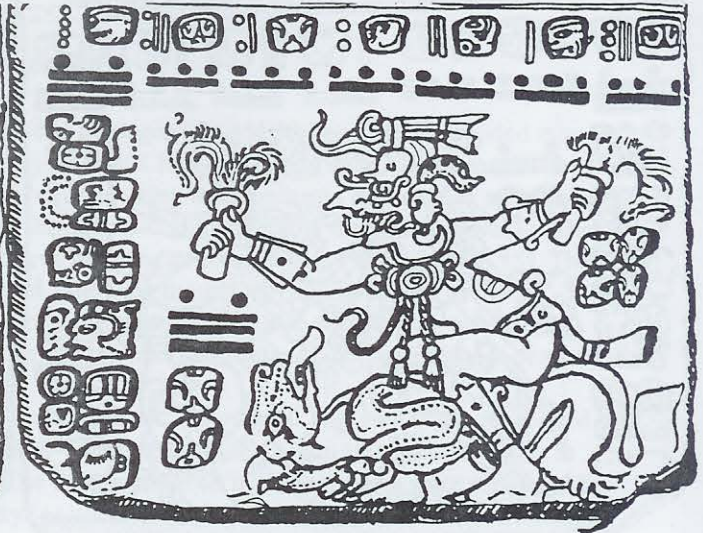


walah
nal
k'u ok
Chak
ox wil
Nal
k'a wah ha

kutz
turkey

perhaps
duck

set up
north
Holy traveler
Chak
Maize God
surplus of food



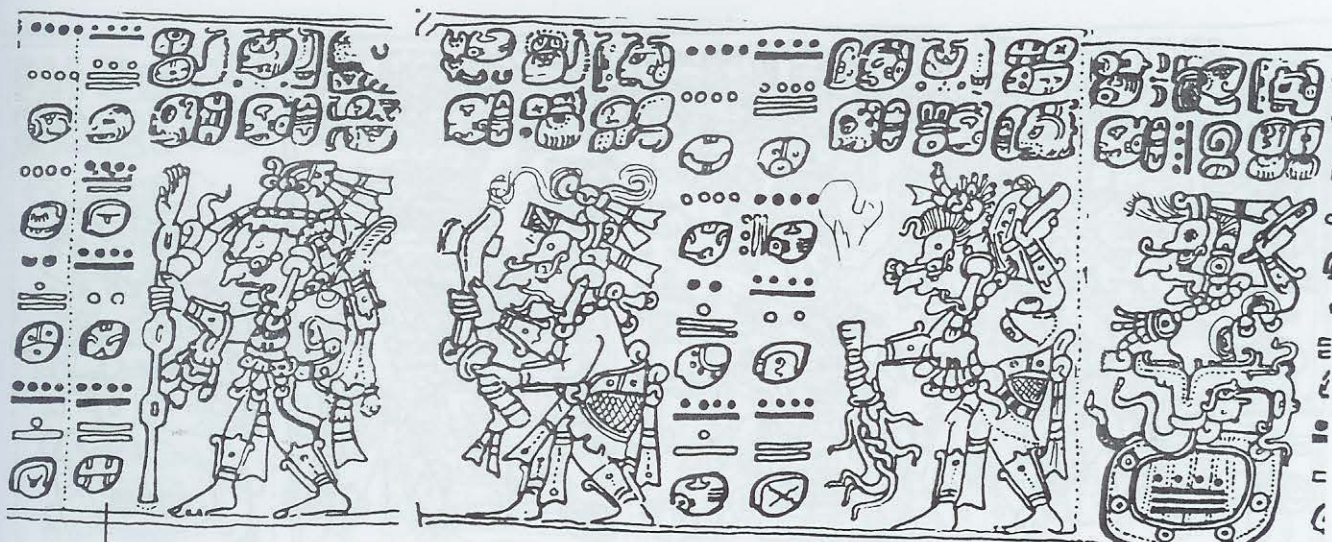
chik'in
k'u ok
Chak
Nal
k'in tun abil
?? hul

west
Holy traveler
Chak
Maize god
drought
bad winds

This scene shows Chak and the Wind God hold a fishing net. The god on the left has an *ik'* sign in his eye and long lips. David Stuart and several other epigraphers have recognized that this must be the Maya Wind God.

The Cordemix lists *kutza* as "duck." Since this is a scene of fishing like those on the Tikal bones, it occurred to us that a "duck" might be more appropriate than a turkey.

This scene shows Chak squatting on top a dying deer. He holds up two flaming torches, although the flames look more like plants.



starting date

lak'in walah
Ch'ok Chak
k'intinhabil
k'ak' te tun

ochi hu tun
Chak
hun ha Ahaw
u sih
kab kun

nal walah
Ch'ok Sak Chak
ahawle
nal

dn of 19 days

ochi tu tun
Chak
bolon k'ik'
u sih
kab kun

east he is set
 the young Chak
 drought
 fire wood and
 stone

he copied writing
 on stone
 Chak
 One Water Lord
 the gift for the earth seat

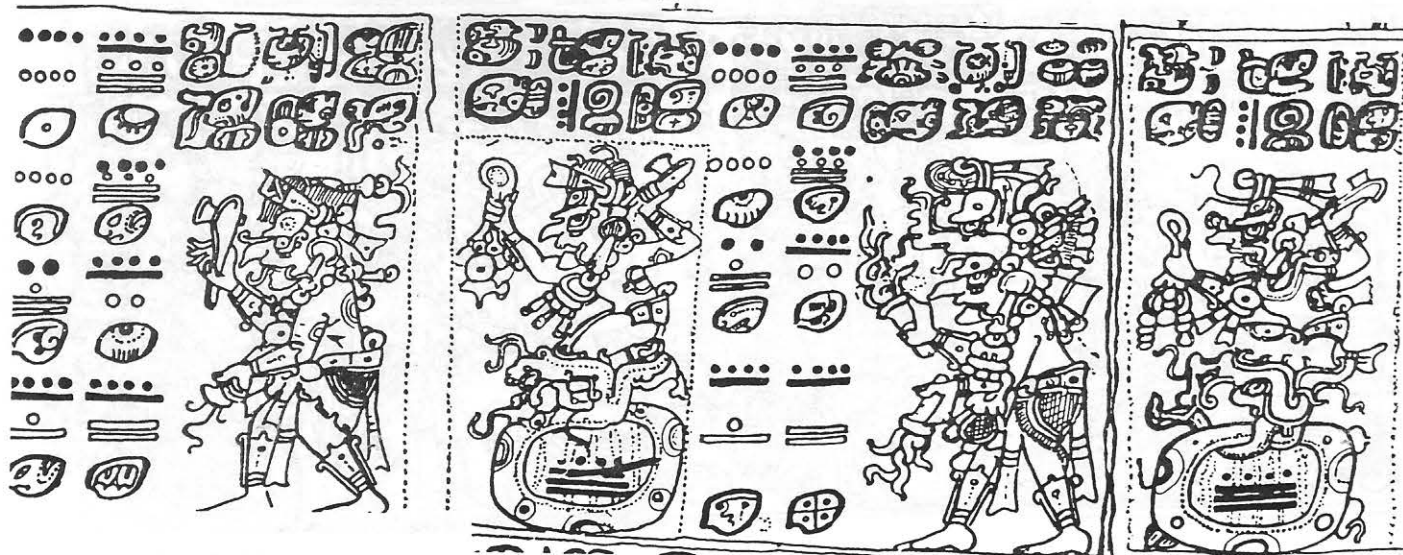
north he is set
 the young White
 Chak
 reign and cobs of
 corn

he copied writing
 on his stone
 Chak
 9 rubber offerings [are]
 the gift for the earth seat

The verb in the text over the second scene consists of *och-chi-ya*. In the Cholan languages, *och* means "to enter" or "to become," but in Yukatek the cognate is *ok*. In turn, *och* means "food" and its one verbal form *ocheltah* means "to have for a meal." We have had no satisfactory interpretation for this reading, but a good possibility may occur in the Motul under the weak *h* as *hoch*, "to copy writing" and "to translate into another language." Since roots with the weak *h* were often written without the *h*, this opens the possibility that the verb is to copy writing. The first Chak carries the same staff and headdress as the Mams in the New Years pages. The same headdress also appears on the rabbit and peccary in the serpent numbers.

Here the first Chak carries a burning torch inverted in one hand and an ax in the other. The second Chak emerges from a serpent whose body surrounds water and the distance number that leads to the next section.

The scribe divided this tzolk'in into four groups of 65 days each. The subdivisions of each 65 days appear to the left of the scenes arranged to read from right to left and bottom and top starting with 10 Ben. The distances numbers are 9,9,9,2,4,9,4 in the columns for a total of 46 days. 19 days bridge across the two scenes to the following columns of dates to complete each segment of 65 days.



*chik'in walah
Yok Ek' Chak
k'in tun habil
?? hul*

west he is set up
the Entering Black
Chak
drought
bad winds

*ochi tu tun
Chak
bolon k'ik'
u sih
ta kab kun*

he copied writing
on his stone
Chak
9 rubber offerings [are]
the gift at the earth seat

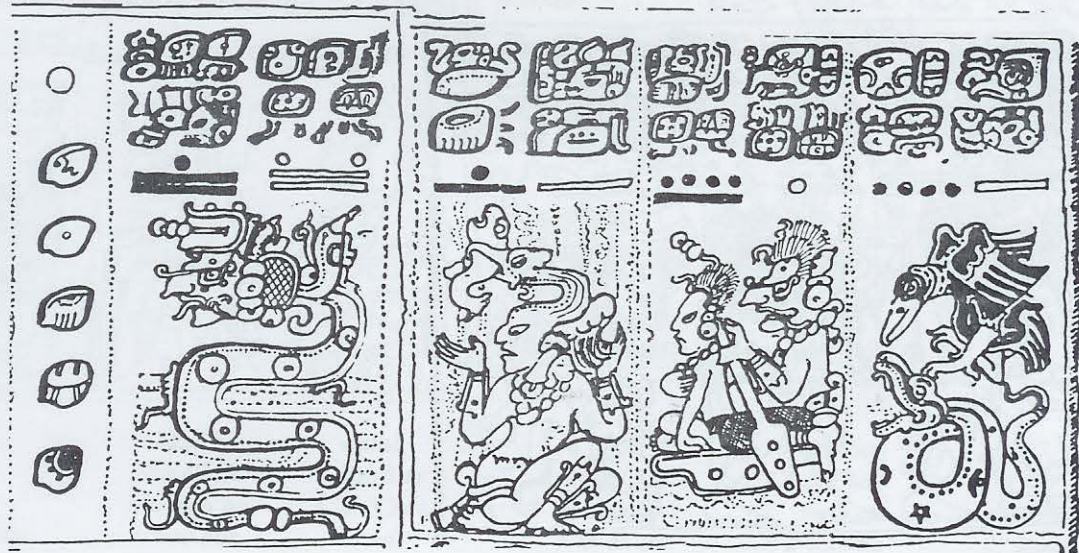
*nohol walah
K'an Chak
yo ??? k'a wah ha
kunal*

south he is set up
the Yellow Chak
???, surplus of
food
seats

*ochi tu tun
Chak
bolon k'ik'
u sih
ta kab kun*

he copied writing
on his stone
Chak
9 rubber offerings [are]
the gift at the earth seat

In this section the first Chak carries the ax and torch, but the second one emerges from the snake holding a bag and his ax. The entire background behind the second scene is blue.



ti kab kun
 ???
 ???
 k'in ak'ab

???
 ???
 ha nal

natz'ah
 Chak
 k'in ak'ab
 xul k'in ak'ab

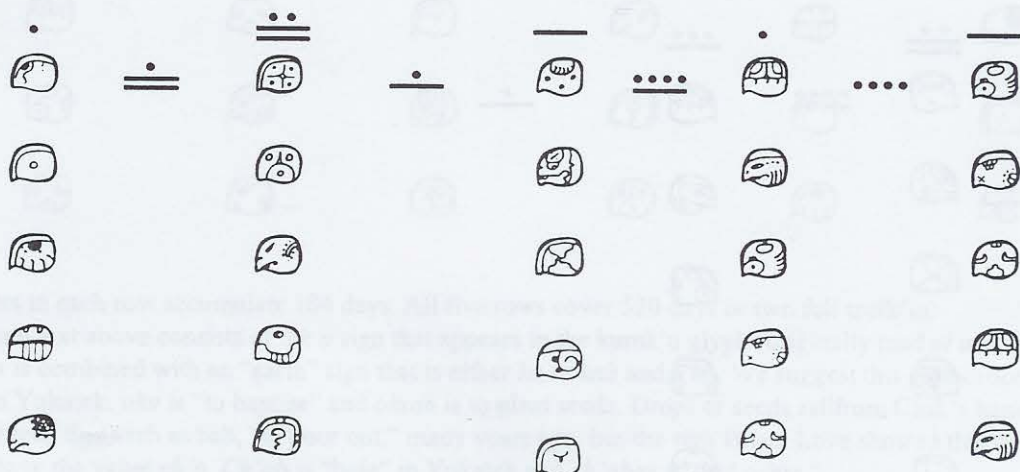
Chak
 tahol
 ti kan k'u

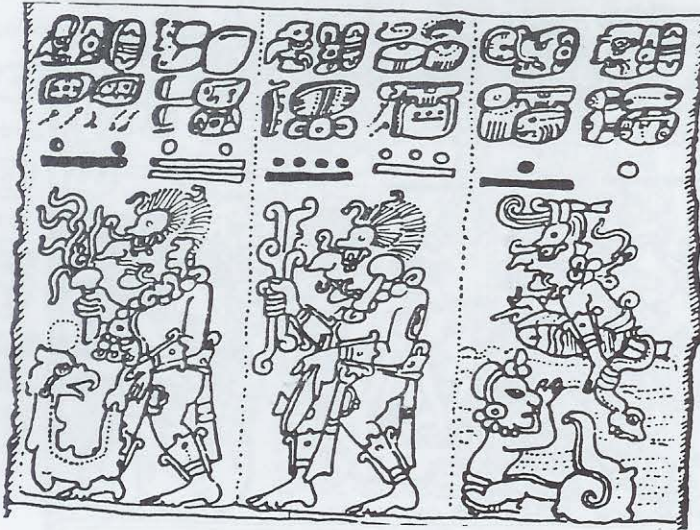
at the earth seat
 ???
 God H
 day night

???
 ???
 water (rain)
 corn ears or a
 place

came near
 Chak
 day and night
 end of days and
 night

Chak
 vulture
 in the sky
 god





Chak
si???
k'in ak'ab
k'ak kab k'u

Chak
k'a wah ha
u tziy
te nal

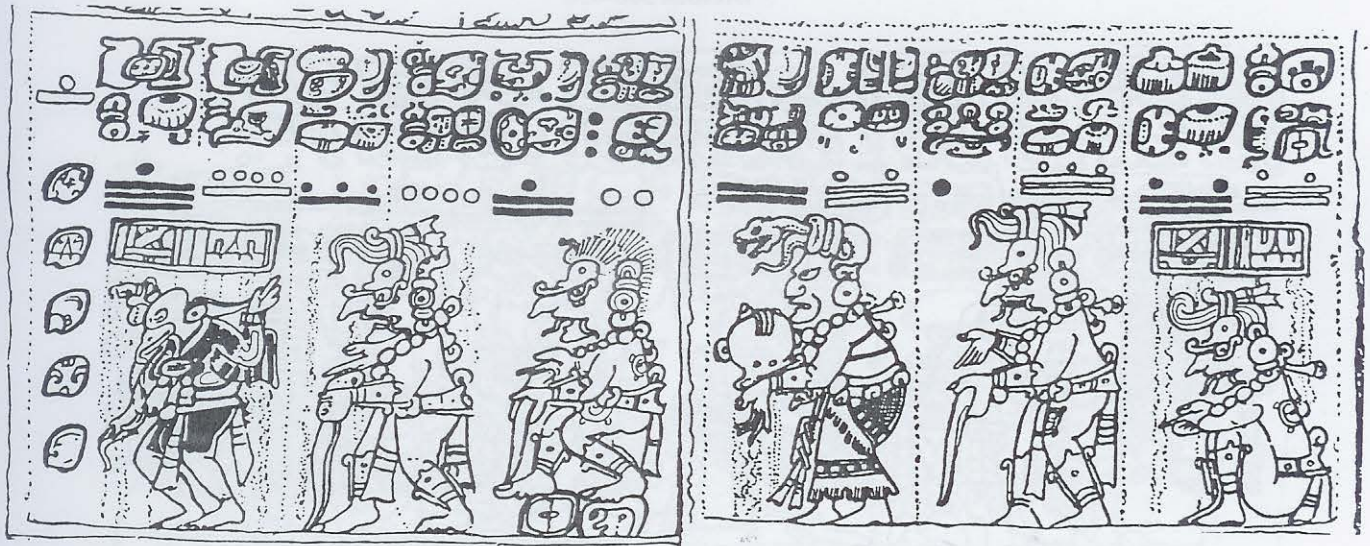
k'in xu Chak
te ??-me
kok ?? k'u

Chak
???
day-night
fire earth gods

Chak
surplus of food
its ???
wood place

sun end?? Chak
???
?????





??? k'in
 ??? uh
 ti hal
 tahl (k'uch)

okah*
 Sak Chak
 k'a wah ha
 ti kab kun

walah
 ti kab kun
 K'an Chak
 ox wil

ch'obah**
 Chak Chel
 xul men
 k'in ak'ab

tu kab kun
 Chak Chak
 inah
 k'a wah ha

???
 ti ???
 chak hal
 ?? kunal

eclipse of the
 sun
 eclipse of the
 moon
 with rain
 the vulture

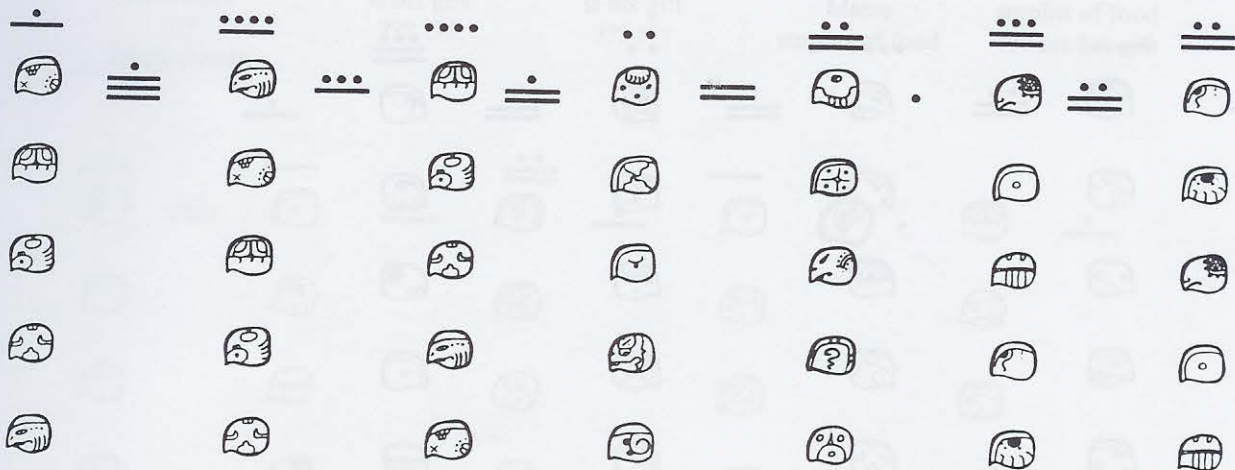
he sows,
 White Chak
 surplus of food
 at the earth
 seats

he is set up at
 the earth seat
 Yellow Chak
 much food

she stained red
 Chak Chel
 end of work
 day-night

at his earth seat
 Red Chak
 seed
 surplus of food

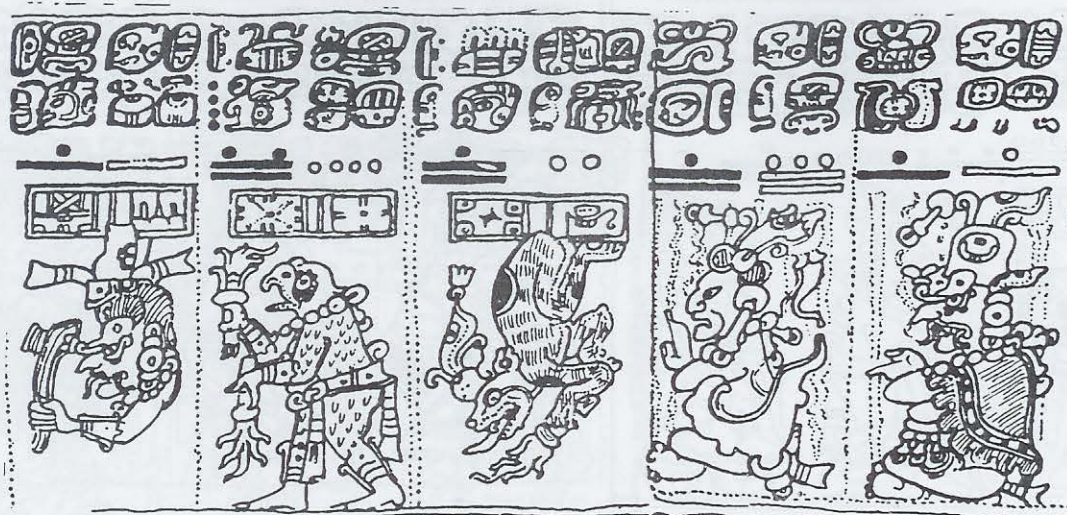
???
 at ???
 great rains
 damage to the
 kuns



The distance numbers in each row accumulate 104 days. All five rows cover 520 days or two full tzolk'in.

The verb in the second text above consists of the *o* sign that appears in the kumk'u glyph (originally read *ol* in Cholan). Here this *o* sign is combined with an "earth" sign that is either *ka* or *kab* and a *ha*. We suggest this collocation reads *o-ka-ha* or *okah*. In Yukatek, *oka* is "to baptise" and *oksa* is to plant seeds. Drops or seeds fall from Chak's hand.

** Floyd Lounsbury read this verb as *bab*, "to pour out," many years ago, but the sign Bruce Love showed that the sign he read as *ba* must have the value *ch'o*. *Ch'ob* is "hole" in Yukatek and *ch'oben* is "red ochre."



ta kan
Chak
Nal
k'a wah ha

u k'ak ti kan
Kan Mo' nal
k'in tun hab

u tok
Tzul Kan
?? K'u
?? kunal

pawahtun?
Chak
???
?? kan

pawahtun
Chak
???
k'in ak'ab

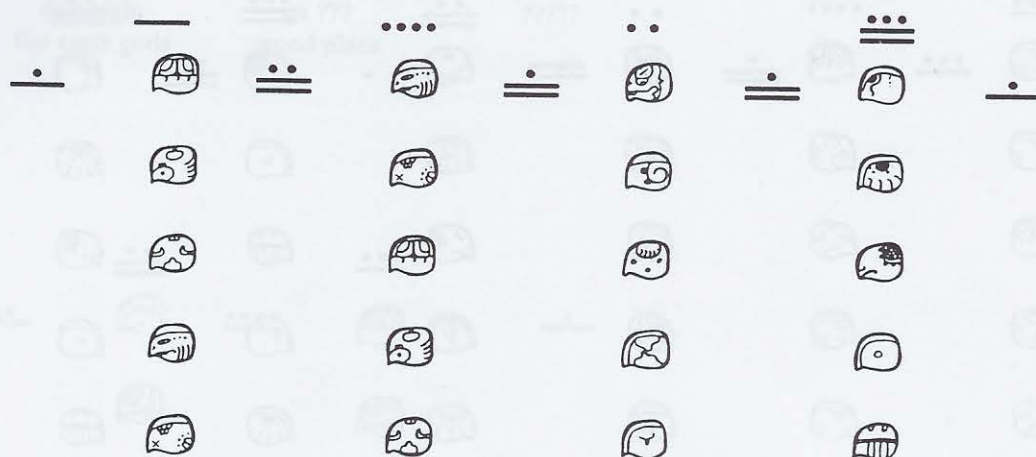
in the sky
Chak
Maize god
surplus of food

his fire
in the sky
Four-Macaw
drought

it burns
Dog Sky
damage to gods
damage to seats

Pawahtun
Chak
???
dame to the
sky

Pawahtun
Chak
eclipse of the
sun
day-night



The last two scenes show Chak as a Pawahtun, but interestingly both beings wear maize symbolism on their heads.



yax abil
Chak
mabach
ani
??ba
Ek' Moyal

anwa?
Chak
k'a wah ha
u sih
???
???

????
Chak
yax hal
u sih
???
???

ha olah
Chak
k'in ak'ab
nal
k'a wah ha
????

olah
Chak
Chak Chel
k'a wah ha
??? u sih

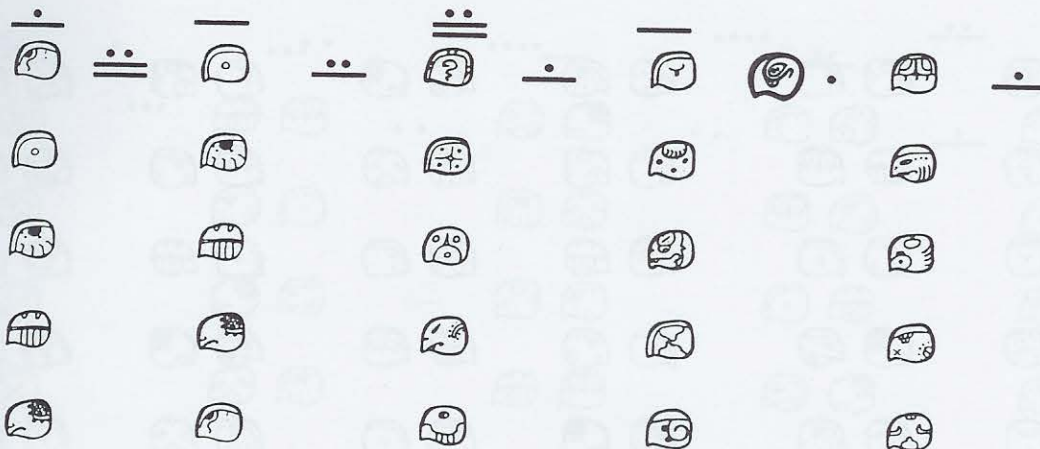
First rain
Chak
???
he is there
???
Black clouds

he is there
Chak
surplus of food
is his gift
??? ???

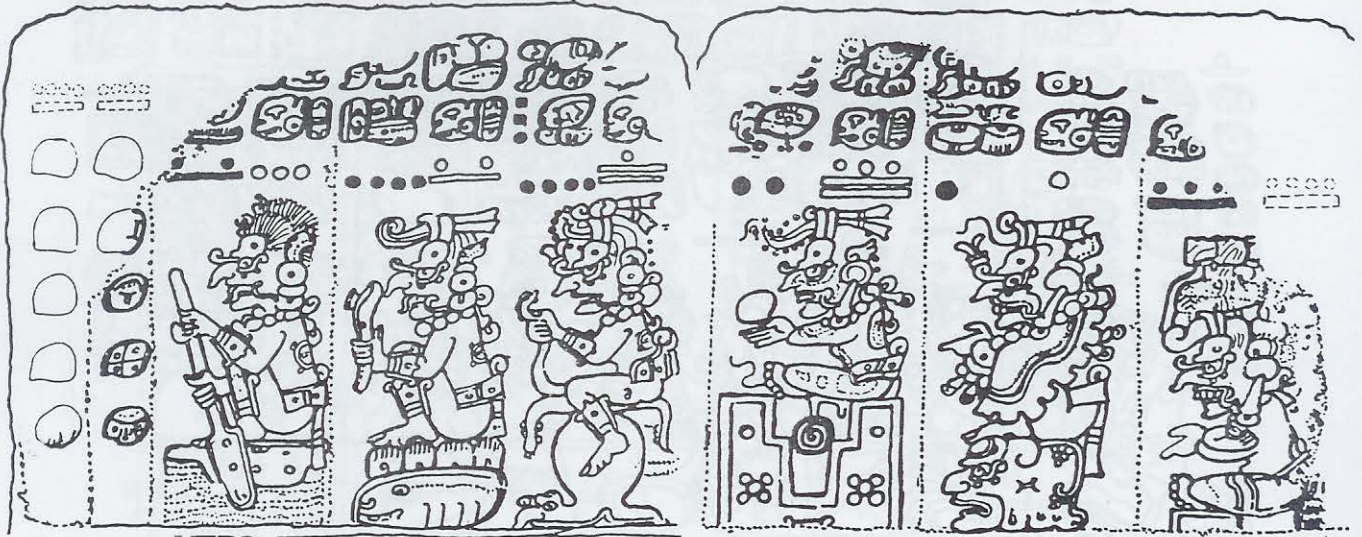
???
Chak
first rain
is his gift
??? ???

he pierced it
Chak
day-night
Maize
surplus of food

she desired
Chak
Chak Chel
surplus of food
??? are her gift



Hol is to drill or to perforate, while *olah* is "to desire" or "to have for good.." Apparently the presence of the *ha* sign changes the *ol* spelling in text 4 and 5.



[missing]
Chak

???
???
ta hem
Chak

anwa
???
ox wil
Chak

???
alaw
pitz
Chak

anwa
???
k'a wah ha
Chak

[missing]
Chak

[missing]
Chak

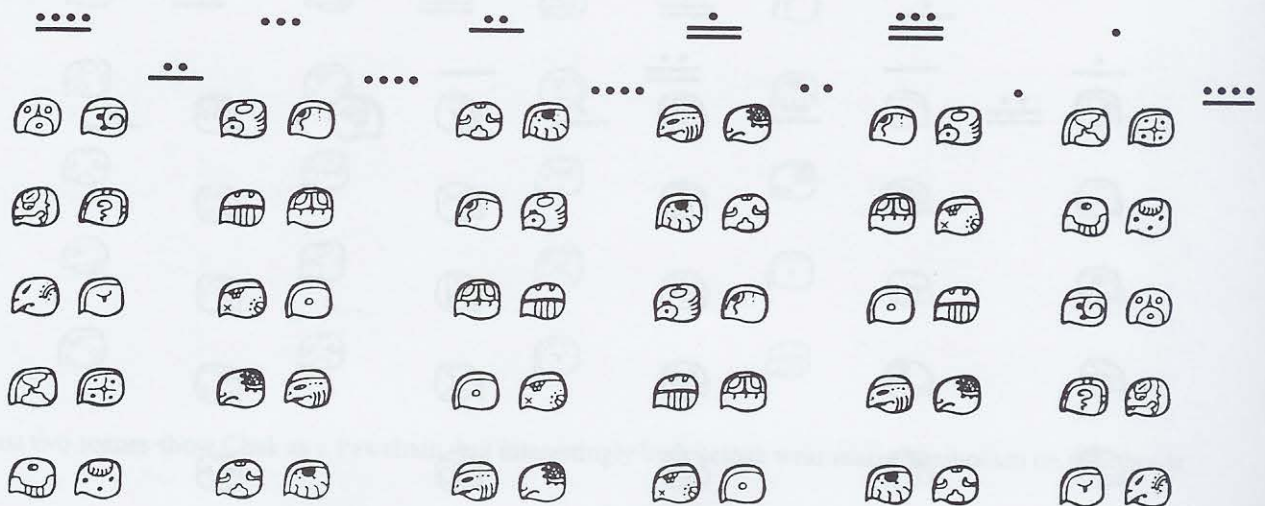
???
???
in the valley
Chak

he is there
???
much food
Chak

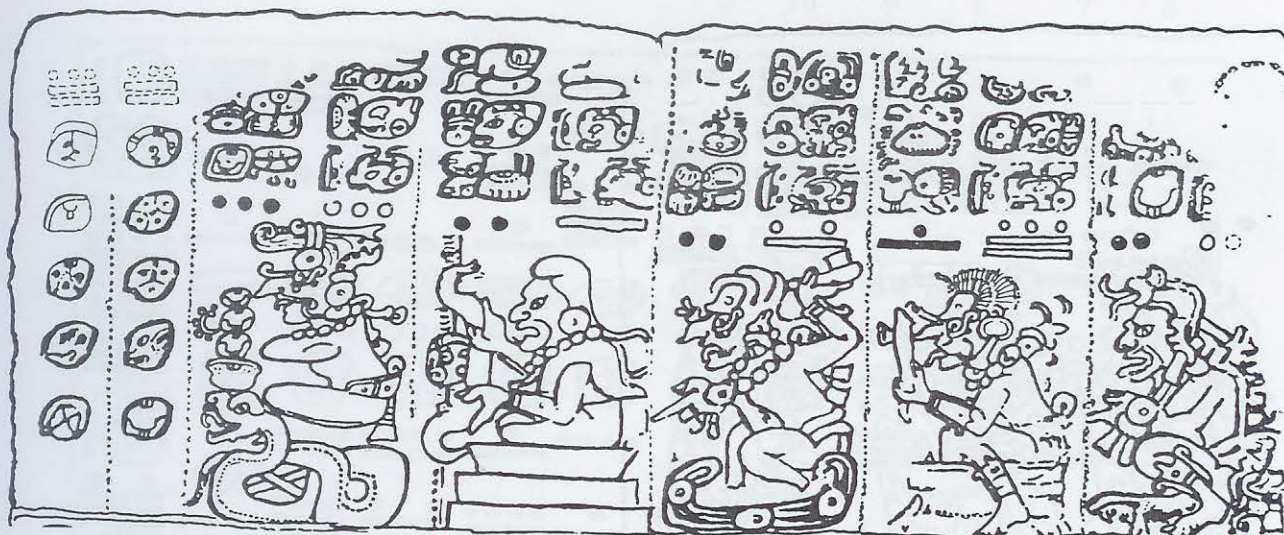
[he is there]
???
much food
Chak

he is there
???
surplus of food
Chak

[missing]
Chak



This is a 10 x 26 day almanac.



???
anwa
ti lak'in
Chak
k'an nik
u sih

anwa
chen?
Sak Xib
Na
k'an nik
u sih

anwa
ta ol?
chik'in
Ek' Xib Chak
sukuk (sup?)
u sih

anwa
???
K'an Xib Chak
wah ??t
u sih

[missing]

ya wah
u [sih]

???
he is there
to the east
Chak
maize flower?
is his gift

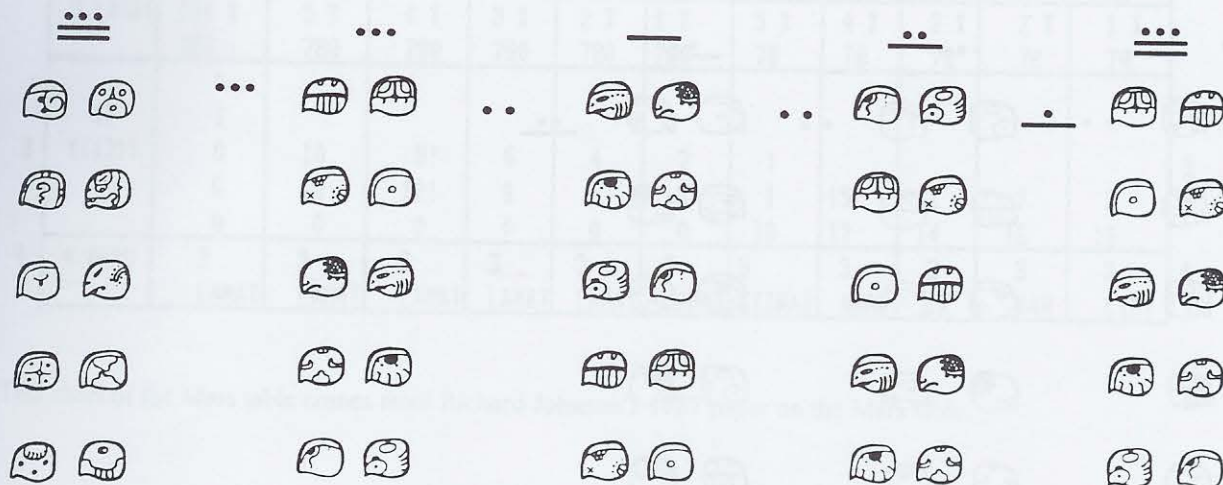
he is there
to the east
Chak
aize flower?
is his gift

he is there
to the west
Black Xib Chak
sukuk
is his gift

he is there
???
to the south
Yellow Xib Chak
???
is his gift

[missing]

zapote tamale
is his gift





[missing]

Chak

kay

hu ok

u sih

anwa

???

Yax Chak

k'a wah ha

kan chi nal

u sih

[missing]

Chak

fish

iguana leg

is his gift

he is there

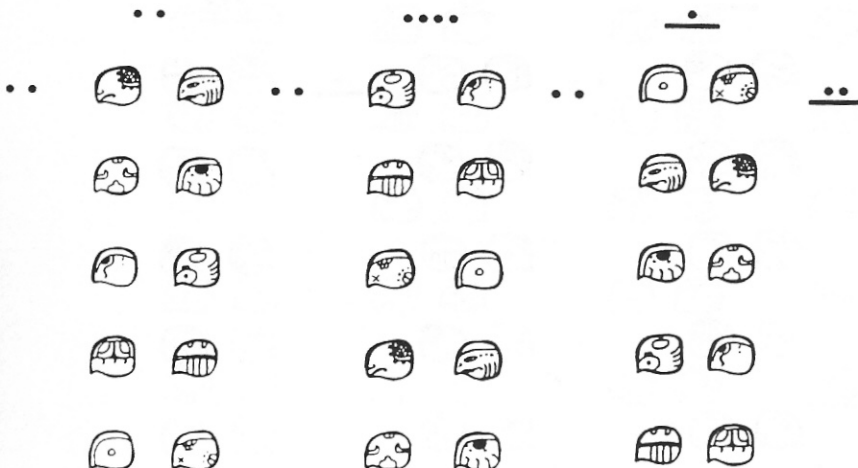
???

Blue Chak

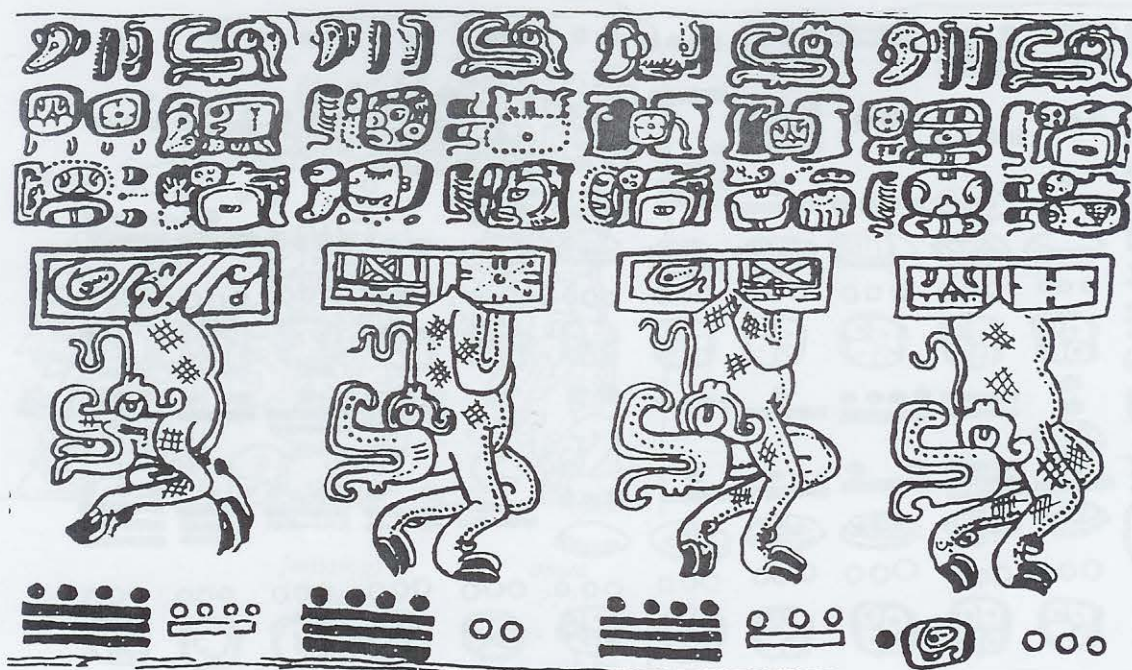
surplus of food

Four Deer God

is his gift



This chart of the Mars table comes from Richard Johnson's 1987 paper on the Mars table.



ch'akah ???
k'in ak'ab
mu kab
nahuli o kunal

ch'akah ???
yah k'u
K'ak ??
??? yah nal

ch'akah ???
??? ???
hu nak
k'a wah ha

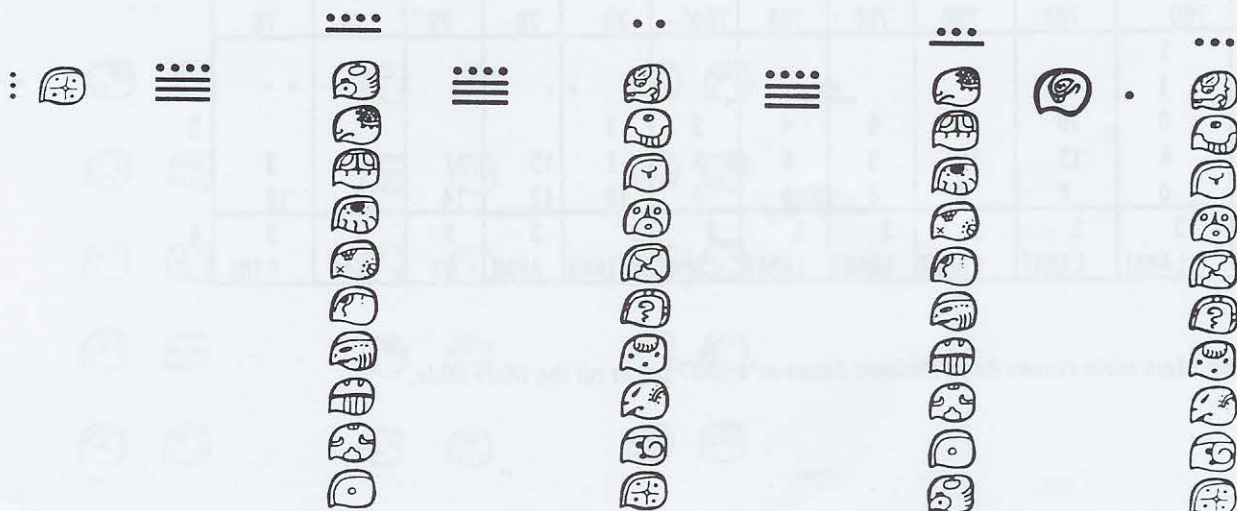
ch'akah ???
k'in tun habil
yah kunal
yah winik
k'ak te tun

crossed over
Mars?
day-night
omen earth
????

crossed over
Mars?
damage to god
bad winds
damage to maize

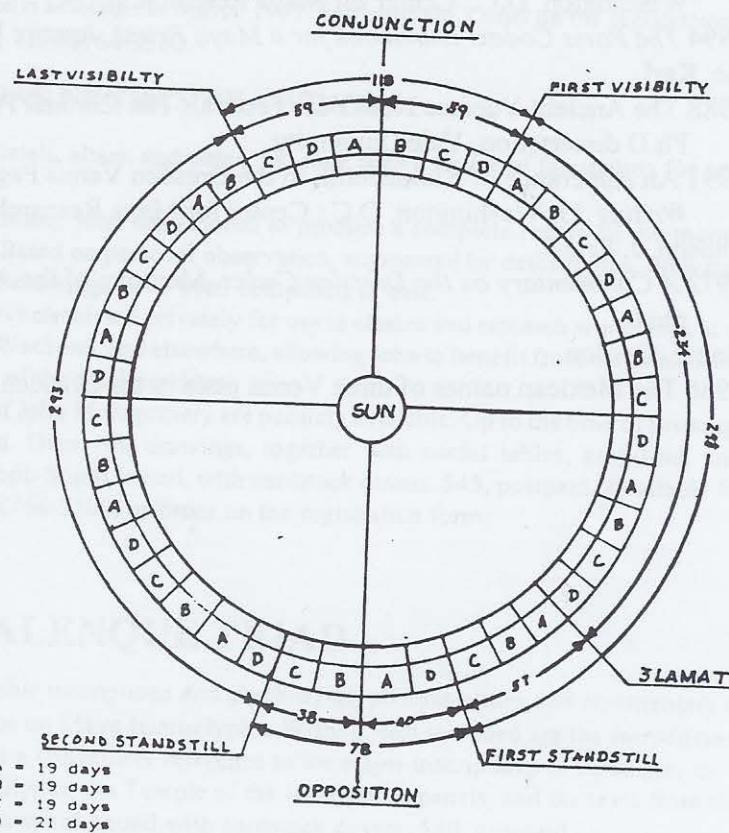
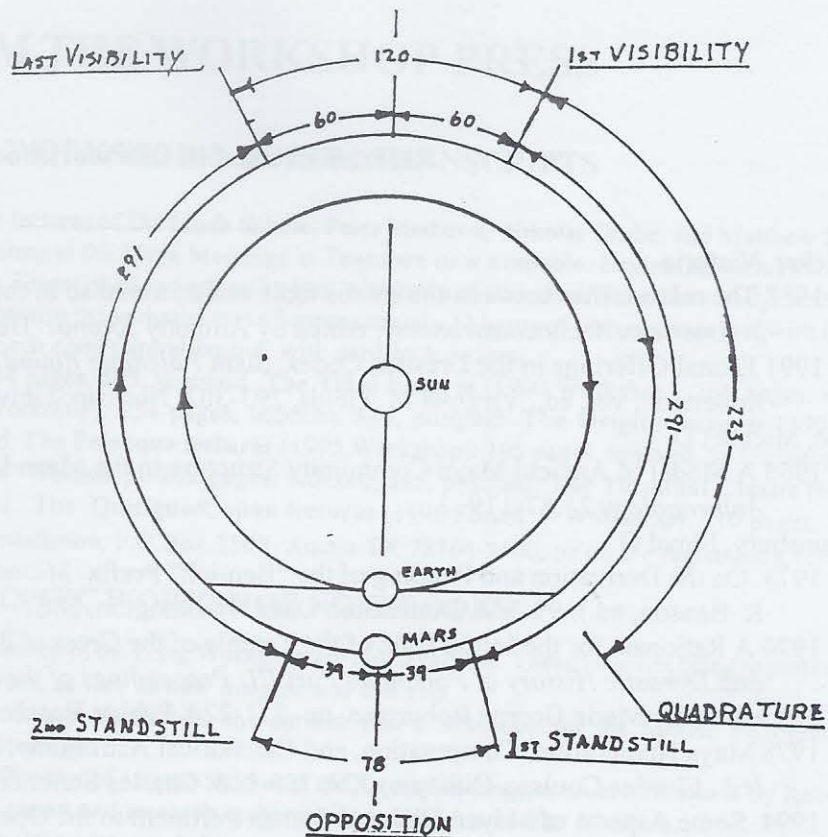
crossed over
Mars?
eclipse of the sun
eclipse of night
????
surplus of food

crossed over
Mars?
drought
damage to the seats
damage to people
punishment



this last
row corre-
sponds to the
first ten
intervals in
the table

These two charts come from Richard Johnson's 1987 paper on this Mars table. The chart on the left diagrams the natural intervals of Mars rounded off to the nearest whole number. The chart on the right shows how the intervals of 19, 19, 19, 21 interact with the Mars stations so that the table could be used for identifying first stationary point, opposition, second stationary point, and other important points.



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FROM THE WORKSHOP PRESS

MAYA WORKSHOP & FORUM TRANSCRIPTS

Complete transcripts ("Proceedings") of the lectures of Dr. Linda Schele, Peter Mathews, Nikolai Grube and Matthew Looper, at the last 8 Workshops on Maya Hieroglyphic Writing at the Maya Meetings at Texas are now available. Beginning with 1996, the name of the event changed from Workshop to Forum. Transcribed and edited by Phil Wanyerka of Cleveland State University, with the approval and corrections of Dr. Schele, each volume contains the verbatim text of approximately 12 hours of lectures, together with figures, maps, and other useful aids to following the text. Each comes spiral-bound, with cardstock covers.

The Copan lectures (1989 Workshop): 384 pages, \$45, postpaid. **The Tikal lectures** (1990 Workshop): 266 pages, indexed, \$40, postpaid. **The Yaxchilan lectures** (1991 Workshop): 254 pages, indexed, \$45, postpaid. **The Origins lectures** (1992 "Creation" Workshop): 243 pages, indexed, \$45, postpaid. **The Palenque lectures** (1993 Workshop): 195 pages, indexed, \$45, postpaid. **The Star Wars lectures** (1994 "Venus-Tlaloc Warfare" Workshop): 202 pages, indexed, \$45, postpaid. **The Terminal Classic lectures** (1995 Workshop): 157 pages, indexed, \$45 postpaid. **The Quirigua/Copan lectures** (1996 Forum = Workshop): 210 pages, indexed, \$45 postpaid. Order from the Maya Workshop Foundation, P.O.Box 3500, Austin TX 78764-3500, or on the registration form.

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The first four Notebooks for the Mixtec Workshop of the Long Workshop are now available. These volumes bring together information from widely scattered, difficult to locate sources, as well as new insights and analysis.

Like the Maya Hieroglyphic Writing Workshop Notebooks, the current year's Notebook for the Mixtec Pictographic Writing Workshop will be available at and after the Meetings.

The Notebooks are prepared by John Pohl, Director of Mixtec Studies at the Texas Meetings, with contributions by Robert Williams and Timothy Allbright. Dr. Pohl is a Mixtec expert and research archeologist at UCLA's Fowler Museum.

Each will contain some introductory material with updates and changes, and a body of material specific to that year's topic. Each comes spiral-bound with card stock covers.

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The Maya city of Piedras Negras, with its exquisite lintels, altars, and stelae, has long been a source of fascination for artist-epigrapher John Montgomery.

For years, with skilled hands and painstaking dedication, John has labored to produce a complete record of the monuments of that beautiful city on the shores of the Usumacinta River. Based on personal observation, augmented by descriptions, drawings, and photos of both early and recent visitors to the site, some 140 drawings have been completed to date.

Many of these accurate, highly-regarded drawings have circulated privately for use in classes and research workshops at the University of Texas, the Maya Meetings at Texas, the Penn Maya Weekend, and elsewhere, allowing John to benefit from comments and suggestions from art-historians and epigraphers in his production of the final versions.

Now, for the first time, the Piedras Negras drawings of John Montgomery are publicly available. Up to the time of printing (Dec, 1993), the very latest completed drawings will be included. Over 140 drawings, together with useful tables, king-lists, and other data-compilations and analyses generated in recent workshops. Spiral bound, with cardstock covers. \$45, postpaid. Available from the Maya Workshop Foundation, P.O. Box 3500, Austin, TX 78764-3500, or order on the registration form.

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Now available together in one volume: the hieroglyphic inscriptions and glyph-by-glyph translations and commentary that appear in the Notebooks of the 1986, 1987, and 1988 Workshops on Maya Hieroglyphic Writing. Not included are the introductory sections of these Notebooks. The **PALENQUE TRIAD** provides a convenient reference to the major inscriptions at Palenque, including Palace Tablet, the Tablet of The Slaves, the Tablet of the 96 Glyphs, the Temple of the Inscriptions panels, and the texts from the Temples of the Cross, Sun, and Foliated Cross. The volume comes spiral-bound with cardstock covers. \$40, postpaid.

NOTEBOOKS FOR WORKSHOPS ON MAYA HIEROGLYPHIC WRITING

Beginning with the IIInd Maya Workshop in 1978, Dr. Schele and, after 1993, her co-presenters, have prepared a Notebook for each Workshop. These Notebooks not only serve the Workshops, but are also the only published materials documenting year by year the advance of the field of Maya hieroglyphic decipherment.

All Notebooks are spiral bound with heavy paper covers. Each is divided into two major sections: an introduction and explanation of the functioning of the glyph system; and actual glyph texts. The former section is up-dated and expanded each year to incorporate new discoveries and interpretations.

Through the XIIth Workshop in 1988, the glyph texts used in the analysis sections were Classic period tablets at Palenque, the Maya site at which the longest inscriptions occur. These texts were divided into three groups, one of which was analyzed each year; each year the data were up-dated and revised to reflect new interpretations and decipherments. Beginning in 1989, Workshops focused on other sites and topics, as elaborated below.

The earliest Notebooks are largely of historical interest, the information in them having been superseded by that in later Notebooks, but those still in print are listed here for the convenience of individuals and libraries desiring to obtain as complete a set of Notebooks as possible.

1977-1981: I-Vth Workshops: Out of print

1982: VIth Workshop: \$35. 104 pages divided roughly equally between explanatory material and analyses of the Palace Tablet, the Temple XVIII jamba, and the Tablet of the 96 Glyphs, at Palenque. By Linda Schele.

1983: VIIth Workshop: \$35. 127 pages divided roughly equally between explanatory material and analyses of the 3 panels in the Temple of the Inscriptions, at Palenque. By Linda Schele.

1984: VIIIth Workshop: \$35. 130 pages divided roughly equally between explanatory material and analyses of the texts from the Temples of the Cross, Sun, and Foliated Cross at Palenque. By Linda Schele.

1985: IXth Workshop: \$35. 108 pages divided roughly equally between explanatory material and analyses of the Palace Tablet, the Temple XVIII jamba, the Tablet of the 96 Glyphs, and the Tablet of the Slaves, at Palenque. By Linda Schele.

1986: Xth Workshop: Back in print. \$35. 129 pages divided roughly equally between explanatory material and analy-

ses of the 3 panels in the Temple of the Inscriptions, at Palenque
1987: XIth Workshop: \$35. 150 pages divided roughly equally between explanatory material and analyses of the texts from the Temples of the Cross, Sun, and Foliated Cross at Palenque. By Linda Schele.

1988: XIIth Workshop: \$35. 113 pages divided roughly equally between explanatory material and analyses of the Palace Tablet, the Temple XVIII jamba, the Tablet of the Slaves, and the Tablet of the 96 Glyphs, at Palenque. By Linda Schele.

1989: XIIIth Workshop: \$35. 127 pages divided roughly equally between explanatory material and the texts of Copan. By Linda Schele.

1990: XIVth Workshop: \$35. 174 pages divided roughly equally between explanatory material and the texts of Tikal. By Linda Schele.

1991: XVth Workshop: \$35. 200 pages, divided between explanatory material and the texts of Yaxchilan. By Linda Schele.

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1995: XIXth Workshop: \$40. 210 pages, divided between explanatory material, and images, text, and commentary on the last 200 years of Classic Maya history. By Linda Schele and Nikolai Grube.

1996: XXth Forum (= Workshop): Over 200 pages, divided between explanatory material, and images, glyph texts and commentary on Quirigua and Copan: Sibling Rivalry in Classic Period Kingdom. By Linda Schele and Matthew Looper.

1997: XXIst Forum (= Workshop): Over 200 pages, divided between explanatory material, and images, glyphic text and commentary on the Dresden Codex. By Linda Schele and Nikolai Grube. Available after March 6, 1997.

MAYA GLYPH POSTER

The history of the accidental discovery of the Tablet of the 96 Glyphs is also the tragic story of its partial destruction. Years ago workmen digging in the area around the Palace at Palenque found a large flat limestone among the debris on the south side of the Tower. Because of its size, a workman began to break it into smaller pieces with a pickaxe, and it received several severe blows before someone discovered that its other side was carved with a long hieroglyphic inscription. Most of the text was pieced together, but some of the smaller fragments were totally shattered and never recovered. It had lain hidden under rubble for centuries, in perfect condition, until that fateful day.

Named the Tablet of the 96 Glyphs, its text preserves the calligraphic beauty of glyphs written with a brush, and indeed it may have been carved by the same master hand that painted its hieroglyphic text. All its fine qualities of detail and shading have been admirably captured in Linda Schele's drawing of its glyph text, and are faithfully reproduced in a dramatic poster. See page 7 for an example. Individual glyphs are roughly one inch by one-and-one-half inches in size, the entire text area measures over 28 inches in width by more than 12 inches in height. The poster is 35 inches wide and 23 inches high, printed in black ink on heavyweight white semi-glossy post-stock.

Truly a masterpiece of Classic Mayan calligraphic art, this beautiful poster is available for just \$25, postage and handling included. The poster comes with a brochure containing a glyph-by-glyph translation of the entire text. It can be ordered on the registration form

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Six of the 96 glyphs from the Tablet of the 96 Glyphs poster described on page 10. (Shown here actual size).

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